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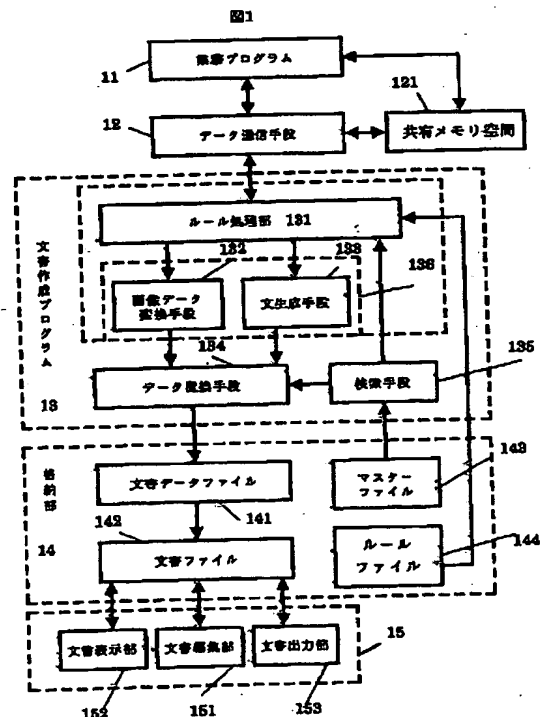
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(54)【発明の名称】 定型文書作成装置

(57) 【要約】

【目 的】 文書作成プログラムに文生成に関するルールや画像データのフォーマット変換を行うルールを適用可能にすることにより、業務プログラムから文書作成プログラムに起動を行うだけで、オペレータの操作なしに定型文書の自動作成を行う定型文書作成装置を提供する。

【構 成】 記憶手段には、置換すべき文書要素に「キー」を付与したフォーマット情報を含む定型文書を記述した第1ファイルと、予め前記「キー」の種類毎に処理すべき規則を記述した第2ファイルとが記憶されている。そして、検索手段によって上記第1ファイルから「キー」を検索し、前記第2ファイルの規則を参照して「キー」に対応するデータを得るために、業務プログラムに問い合わせを行う処理を行う。この結果に基づいて得られた置換すべき文書要素のデータは、置換手段によって、対応する置換箇所に置換される。



【特許請求の範囲】

【請求項1】 業務プログラムに対して問い合わせを行う通信手段を備え、その問い合わせ結果に基づいて定型文書を作成する定型文書作成装置であって、置換すべき文書要素に「キー」を付与したフォーマット情報を含む定型文書を記述した第1ファイルと、予め前記「キー」の種類毎に処理すべき規則を記述した第2ファイルとを記憶する記憶手段と、前記記憶手段内の第1ファイルから「キー」を検索する検索手段と、前記記憶手段内の第2ファイルの規則を参照し、前記検索手段の検索結果の「キー」に対応する規則に基づいて前記通信手段を介して、「キー」に対応する情報を業務プログラムに問い合わせるための処理を行う処理手段と、当該処理手段の問い合わせ結果に基づいて得られたデータから、置換すべき文書要素のデータを作成するデータ作成手段と、当該データ作成手段で作成された文書要素のデータを「キー」に対応する置換箇所に置換する置換手段と、を具備することを特徴とする定型文書作成装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明は、UNIX等のマルチプロセスが稼働可能なOS上で動作する文書作成装置に係わり、定型化された文書を作成するのに好適な定型文書作成装置に関する。なお、本明細書において、「文書」とは、単に文字のみからなる文だけを意味するのではなく、画像、グラフ、表等を文書内に挿入して作成される文書を含む。

【0002】

【従来の技術】 従来、この種の文書作成装置では、テキスト、図、グラフ等のオブジェクトを持つ文書を作成する際に、オペレータが文書内の特定の箇所にデータを入力したり、他の業務プログラムを起動させることにより、そのプログラムによって処理した値を基にして定型文書を作成していた。このような文書作成装置としては、たとえば特開平1-211067号公報に記載されているものがある。また、別の文書作成装置では、定型文書の中に部分的に含まれ、その定型文書毎に記載内容が変わる可変領域を設け、この可変領域に対して、対応する標準ユニットを埋め込むことによって定型文書を自動的に完成していた。このような文書作成装置としては、たとえば、特開平1-231162号公報に記載されているものがある。

【0003】

【発明が解決しようとする課題】 上記特開平1-211067号公報に記載された文書作成装置では、オペレータが不在時に、バッチ処理等で大量の定型文書を作成することに関しては、全く配慮されていなかった。そのた

め、上記従来技術で文書を作成する際には、常にオペレータが文書作成装置の側にいなければならない、決められたフォーマットの文書の呼び出しや、データの手入力、他の業務プログラムの起動といった操作が必要であった。また、特開平1-231162号公報に記載された文書作成装置では、文書データ、画像データ、数値データ等のそれぞれからなる標準ユニットを予め全て用意しておかなければならず、他の業務プログラムで予め作成されている文書データ、画像データ、あるいは数値データ等を利用して定型文書を作成することができなかった。

【0004】 本発明は、以上のような課題を解決し、業務プログラムから文書作成プログラムを起動するだけで、オペレータの操作なしに定型文書の自動作成を行う定型文書作成装置を提供することを目的とする。

【0005】

【課題を解決するための手段】 前記目的を達成するために、本発明の文書作成装置は、業務プログラム（図1の11）に対して問い合わせを行う通信手段（図1の12）を備え、その問い合わせ結果に基づいて定型文書を作成するものであって、置換すべき文書要素に「キー」を付与したフォーマット情報を含む定型文書を記述した第1ファイル（図1の143）と、予め前記「キー」の種類毎に処理すべき規則を記述した第2ファイル（図1の144）とを記憶する記憶手段（図1の14）と、当該記憶手段（14）に記憶されている第1ファイル（143）から「キー」を検索する検索手段（図1の135）と、前記記憶手段（14）に記憶されている第2ファイル（144）の規則を参照し、前記検索手段（135）の検索結果の「キー」に対応する規則に基づいて前記通信手段（12）を介して、「キー」に対応する情報を業務プログラム（11）に問い合わせるための処理を行う処理手段（図1の131）と、当該処理手段（131）の問い合わせ結果に基づいて得られたデータから、置換すべき文書要素のデータを作成するデータ作成手段（図1の132、133）と、当該データ作成手段（132、133）で作成された文書要素のデータを「キー」に対応する置換箇所に置換する置換手段（図1の134）とから構成される。

【0006】

【作 用】 記憶手段には、定型文書の中に置換すべき文書要素に「キー」を付与したフォーマット情報を含む定型文書を記述した第1ファイル、たとえばマスターファイル、および前記「キー」の種類毎に処理すべき規則を記述した第2ファイルがそれぞれ記憶されている。検索手段は、上記記憶手段に記憶されている第1ファイルに埋め込まれている「キー」を検索する。処理手段は、前記記憶手段に記憶されている第2ファイル、たとえばルールファイルの規則を参照して、前記検索手段の検索結果である「キー」に対応する規則に基づいて、前記通

信手段を介して、業務プログラムに問い合わせる。業務プログラムでは、前記「キー」に対応する情報を算出して処理手段に前記データ通信手段を介して返送する。データ作成手段は、前記処理手段の問い合わせ結果として業務プログラムから得られた置換すべき文書要素のデータを作成する。そして、データ置換手段は、前記データ作成手段の作成したデータにより、「キー」に対応する文書要素の個所に所望のデータを置換する。業務プログラムから得られる文書要素データは、たとえば、文字列データ、数値データ、画像データ等が含まれる。以上のようにして、所望の定型文書を作成するための第1ファイルおよび第2ファイルを予め作成しておけば、他の業務プログラムで算出されるデータをオペレータが一々取り出して文書要素内に挿入するための指令を与える等の操作を行うことなく、自動的に定型文書が作成される。

【0007】

【実施例】図1は本発明における定型文書作成装置の一実施例を説明するためのブロック構成図である。図1において、定型文書作成装置は、文字列データ、数値データ、あるいは画像データ等の文書要素データを作成する業務プログラム11と、当該業務プログラム11で作成した文書要素データを文書作成プログラムからの要求により、業務プログラム11から取り込むためのデータ通信手段12と、当該業務プログラム11によって作成された文書要素データを基にして定型文書を作成する文書作成プログラム13と、定型文書作成装置に必要な各種ファイルを格納する格納部14と、文書を作成／編集すると共に、当該文書を出力する入出力部15とから構成される。上記業務プログラム11と文書作成プログラム13との間でデータの遣り取りを行うためのデータ通信手段12は、たとえば共有メモリ空間121を介して行われる。上記文書作成プログラム13は、後述のルールファイル144のルールに従って文書を作成するために処理を行うルール処理部131と、定型文書の中の置換部分を作成した文書データや画像データに置き換えるデータ置換手段134と、後述のマスターファイルの中の置換部分を検索する検索手段135と、画像あるいは文書を作成するデータ作成手段136とから構成される。また、上記データ作成手段136は、上記データ通信手段12によって得られた画像データを文書データファイルのフォーマットに変換する画像データ変換手段132と、上記データ通信手段12によって得られた文字列データ、数値データから文書データを生成するための文生成手段133とから構成される。格納部14は、文書作成プログラム13によって作成された文書を中間フォーマットの形で格納される文書データファイル141と、当該文書データファイル141のデータを通常の文書編集可能な形に変換して格納する文書ファイル142と、文書中に定型文を変換するための「キー」を埋め込んだ文字・段落・ページ等の各フォーマット情報や文書

内の図形・イメージの各属性からなるマスターファイル143と、文書作成のためにルール処理部131が処理するためのルールが格納されているルールファイル144とから構成される。入出力部15は、図示されていないキーボードあるいはマウス等からなり、各種データや指示情報等の情報を入力する入力部と、入力部等からの入力情報に基づいて文書等を作成／編集する文書編集部151と、文書編集部151によって作成／編集された文書等を表示するための文書表示部152と、作成された文書等をプリンタ等によって出力するための文書出力部153とから構成される。

【0008】図2は本実施例における定型文書作成装置によって作成された定型文書の一例を説明するための図である。図2に示す文書「5. 個別ライフイベント資金配分についての基本的な考え方」には、生活設計を立てるための資金配分の一例がグラフと共に示されている。上記のような定型文書を作り、これを顧客リストに掲載されている者に発送したい場合には、顧客の一人一人によって氏名、項目、金額や説明文等が異なる。そして、業務プログラム11のデータベースに格納されている各顧客の氏名その他の資料等を一々オペレータが呼び出して図2の文書に挿入することは大変な作業である。たとえば、図2に示す定型文書は、業務プログラム11のデータベースに格納されている「富士太郎」に発送するための文書であり、この文書を作成するためには、オペレータによって「富士太郎」という氏名と、データベースから算出される富士太郎に関する項目、金額や説明文等を記入するための操作が行われていた。そこで、本実施例の定型文書作成装置は、上記氏名、項目、金額、説明文等をオペレータが一々挿入する作業を無くすためのものである。すなわち、本実施例の定型文書作成装置は、図3に示すマスターファイル143、および図5に示すルールファイル144を有し、このルールファイル144のルールに従ってマスターファイル143の値をそれぞれ所望な値に置換することで、図2に示すような定型文書を作成する。

【0009】図3は図2に示す文書のマスターファイルの一例を示す図である。図3に示すマスターファイル143は、予め置換する部分に「キー」を埋め込むと同時に所定の文書が作成され、格納部14に格納されている。たとえば、このマスターファイル143は、置換するための「キー」を埋め込んだ文字・段落・ページの各フォーマット情報や文書内の図形・イメージの各属性で構成される。同図において、マスターファイルの最初の4文字で、その行のタイプを表している。たとえば、「Para」は、段落属性を表すデータで、その属性をその後の括弧内に記載されている数字によって表す。「Tabs」は、文字間隔を意味し、その属性をその後の括弧内に記載されている数字によって表す。「Text Font」は、文字情報を意味し、その文字の大

きさや字体等の属性をその後の括弧内に記載されている数字によって表す。「String」は、定型文書となる文字列を表す。「Brek {Type [0]}」は、改頁情報を意味している。「Page」は、ページフォーマット情報を表わすデータである。「\$\$」は、本発明の「キー」の始まりを意味し、その後のアルファベットは、「キー」である。たとえば、「STR1」は文字列「富士太郎」に、「STR2」は、文字列「公的年金等の収入がありますので、・・・補填することができます。」に、「NUM1」は、数字「30」に、「INCOME_GRAPH」は、図2におけるグラフにそれぞれ対応する。

【0010】図4は共有メモリ空間が業務プログラムと文書作成プログラムとのワーキングメモリとして働くことを説明するための図である。図4において、文書作成プログラム13は、業務プログラム11の子プロセスとして起動され、初期設定として業務プログラム11が起動可能な状態におかれる。業務プログラム11は、文書作成プログラム13を起動する前に、業務プログラム11を実行するための主メモリ上にデータ通信手段12によって、たとえば共有メモリ空間121を確保し、そのアドレスを内部で保持する。その後、業務プログラム11は、文書作成プログラム13を起動し、共有メモリ空間121のアドレスをデータ通信手段12を介して、子プロセスである文書作成プログラム13に伝える。これにより、どちらのプロセスからでも共有メモリ空間121をアクセスすることができる。業務プログラム11と文書作成プログラム13とのデータ通信は、業務プログラム11によって算出された文字列データ、数値データ、画像データ等が、データ通信手段12を介して、文書作成プログラム13に送られる。これらのデータが文字列データや数値データの場合は、文生成手段133により、そのまま又は加工され、データ置換手段134に送出される。また、画像データの場合は、画像データ変換手段132により、データ置換手段134で処理できるフォーマットに変換され、データ置換手段134に送出される。そして、データ置換手段134では、検索手段135で検索された変換「キー」の部分を業務プログラム11からデータ作成手段136を介して受け取った上記データで置き換えて、これを文書データファイル141にコピーする。

【0011】図5は文書作成プログラムにおいて、定型文書の置換部分をどのように置き換えるかについて説明するためのルールファイルを示す。ここでは、検索手段135で抽出した「キー」、たとえば「STR1」、「STR2」、「NUM1」等を基に、それに対応するルールの実行部を実行する。ルールの実行部では、通常のC言語の関数が記述できるので、業務プログラム11から文字列データ、数値データを取り出す関数や画像データをコンバートする関数が用意されている。このプロ

セス間のデータの受け渡しは、たとえば、図4に示す共有メモリ空間121とシグナルを利用して行っている。

【0012】図5において、たとえばルールファイル144の条件部で「キー」に対応する条件部がマッチしたときは、その実行部を実行する。まず、業務プログラム11から受信した文字列データを直接置換する例を説明する。ルール処理部131では、「キー」として「STR1」が入って来ると、ルールファイル144の条件部を検索し、対応する実行部を特定し、実行する。すなわち、「GetMessage_Str」という関数を実行し、「USER_NAME」を共有メモリ空間121に書き込むと共に、書き込んだことをデータ通信手段12を介して通知することにより、データ通信手段12を介して業務プログラム11からユーザ名、たとえば「富士太郎」を共有メモリ空間121を介して受信し、「sval」という変数に受信した「富士太郎」を代入する。この代入された値は、文生成手段133により、リターン値としてデータ置換手段134へ送られ、文書データファイル141にコピーされる。

【0013】次に、業務プログラム11から受信した文字列データを加工する例を説明する。ルール処理部131では、「キー」として「STR2」が入ってくると、ルールファイル144の条件部を検索し、対応する実行部を特定し、実行する。たとえば、図5のルールファイル144では、「GetMessage_Num」という関数を実行し、「STR1」の場合と同様に、「SILVERINCOME」を共有メモリ空間121に書き込む等の処理をして業務プログラム11へ問い合わせを行なうことにより、データ通信手段12を介して、業務プログラム11から老後の収入があるか否かの情報、たとえば「1」あるいは「0」を得て「nval」という変数に代入する。次に、「GetMessage_Str」という関数を実行し、同様に、「SILVERMAIN_INCOME」を共有メモリ空間121に書き込む処理等により業務プログラム11に問い合わせを行なう。この結果、データ通信手段12等を介して老後の主な収入の項目、たとえば「公的年金」を得て「sval」という変数に代入する。「nval」の値が「1」の時は、「MakeSentence」という関数を実行し、「sval」という変数と他の引数を組み合わせて文字列を生成し、それを戻り値として返す。すなわち、文生成手段133により、「sval」の値「公的年金」に「等の収入がありますので、老後の・・・補填することができます。」が組み合わせられてデータ置換手段134へ送出される。それ以外の時、すなわち、「nval」が「0」であれば、「第3章の確認項目で収入が有りませんでしたので、ないものとして計算してあります」がそのままデータ置換手段134へ送出される。その後、データ置換手段134により文生成手段133で生成された文字列が中間形式の文書データファイ

ル141へコピーされる。

【0014】次に、数値データの例を説明する。ルール処理部131では、「キー」として「NUM1」が入ってくると、ルールファイル144の条件部を検索し、対応する実行部を特定し、実行する。たとえば、「Get Message_Num」という関数を実行し、同様にデータ通信手段12を用いて業務プログラム11から「SILVER_COST_M」の値(図2の例では老後の生活費の月額)を得て「nval」という変数に代入する。最後に、画像データの例を説明する。ルール処理部131では、「キー」として「INCOME_GRAPH」が入ってくると、同様に、「INCOMEBM」を共有メモリ空間121を介して業務プログラム11に送信することによりデータ通信手段12を介して業務プログラム11で作成した生涯収支に関するビットマップデータを得る。たとえば、対応する画像データが入ったファイル名を共有メモリ空間121を介して受信し、そのファイル名を戻り値として返す。そして、そのファイル名の内容を画像データ変換手段132が中間形式に変換し、データ置換手段134を介して文書データファイル141へコピーする。以上の操作を繰り返して、中間形式の文書データファイル141を作成する。その後で、中間形式の文書データファイル141から通常の文書編集可能な形に変換して文書ファイル142を作成する。

【0015】次に、定型文書作成装置の文書作成に関する動作を図6ないし図9を参照して説明する。図6は本実施例における検索手段のフローチャートである。ステップ61では、検索手段135が図3に示すマスターファイル143のデータを一行ずつ読み込む。ステップ62では、上記検索手段135がマスターファイル143の全ての行のデータを読み込んだか否かを調べる。マスターファイル143の全ての行を読み込んでいない場合には、ステップ63へ進み、マスターファイル143の全ての行を読み込んだ場合には、読み込みを終了する。ステップ63では、検索手段135により読み込んだ行のデータ毎に、その中に変換のための「キー」、たとえば図3に示す「STR1」等が含まれているか否かを調べる。変換のための「キー」が含まれていれば、ステップ64に進み、変換のための「キー」が含まれていなければステップ65に進む。ステップ64では、ルール処理部131が変換のための「キー」を所定の文書になるように置き換えるためのルールファイル144を読み込み、ルールを起動させる。すなわち、文書に埋め込まれた「キー」を検索手段135で検索し、これをルール処理部131へ送り、後述する図7の処理が行われる。その後、ステップ61に戻り、マスターファイル143の次の行を読み込み、これをファイルの最後の行が読み終わる(EOF=End Of File)まで続ける。ステップ65では、ステップ63の検査で変換のための

「キー」がない場合、データ置換手段134を介してその行の文字列等をそのまま文書データファイル141にコピーする。

【0016】次に、図6に示すステップ64について図7を参照して詳細に説明する。すなわち、ステップ64において、変換のための「キー」が検索され、変換のためのルールが起動されると、ルール処理部131は、図5に示すルールファイル144を読み込み、その実行部の記述に従い、データ通信手段12を介して、業務プログラム11とデータ通信を行う。図7は文書作成プログラムと業務プログラムとの間におけるデータ通信手段を介した処理の流れの一例を示すフローチャートで、図6に示すステップ64の詳細を示すものである。図8は文書作成プログラムにおける処理の流れの一例を示す。図9は業務プログラムにおける処理の流れの一例を示す。そして、図8および図9に示すフローチャートは、図7に示すステップ72におけるルールを実行する際に、業務プログラム11と文書作成プログラム13との間で行われる処理の流れである。まず、ステップ71では、ルール処理部131がルールファイル144で「キー」に対応するルールを検索する。ステップ72では、ルール処理部131が前記検索されたルールに従って、「キー」に対応したルール実行部を実行する。

【0017】すなわち、ルール実行部の実行を示す図8および図9のフローチャートについて説明する。ステップ81では、ルール処理部131が、検索手段135によって検索された「キー」情報をデータ通信手段12を介して、共有メモリ空間121にコピーするような処理を行う。たとえば、「キー」情報が「STR1」の場合には、「USER_NAME」「STR2」の場合には、「SILVER_INCOME」等を共有メモリ空間121にコピーする。ステップ82では、ルール処理部131がデータ通信手段12を介して、業務プログラム11へ共有メモリ空間121に上記文字列をコピーしたことを知らせるシグナルを送信する。

【0018】上記シグナルを受信した業務プログラム11側の処理について図9のフローチャートにしたがって説明する。ステップ91では、文書作成プログラム13からのシグナルを受信したか否かを調べる。この調べは、文書作成プログラム13からシグナルが来るまで続けられる。前記シグナルを受信するとステップ92へ進む。ステップ92では、前記シグナルが業務プログラム11の終了を示すシグナルであるか否かを調べる。業務プログラム11の業務が終了すると、終了のシグナルを得て処理を終了し、終了のシグナルが出ない場合には、次のステップに進む。ステップ93では、文書作成プログラム13から送られて、共有メモリ空間121に一時的に格納されている「キー」情報をコピーする。たとえば、「USER_NAME」あるいは「SILVER_INCOME」等が業務プログラム11によりコピーさ

れる。ステップ94では、業務プログラム11によって、前記「キー」情報に対応する値を算出する。たとえば、処理済みで保持しているデータのうち文字列に対応する値を読み出したり、または文字列から所定の処理を行い、その処理結果を算出結果とする。ステップ95では、前記算出されて求められた情報を共有メモリ空間121へコピーする。この情報は、業務プログラム11側で作成されて格納されていた「キー」情報に対応するもので、たとえば「富士太郎」、「1」、「0」等の文字列、数値、あるいはグラフ等の画像データが入ったファイル名等がある。ステップ96では、「キー」情報に対応する情報が共有メモリ空間121へ格納されたことを示すシグナルを文書作成プログラム13へ送信する。

【0019】上記シグナルを受信した文書作成プログラム13側の処理について再び図8のフローチャートに戻って説明する。ステップ83では、ルール処理部131が業務プログラム11から前記ステップ96のシグナルを受信したか否かを調べる。この調べは、返信シグナルが来るまで続けられる。ステップ84では、前記ステップ95において業務プログラム11が共有メモリ空間121へ格納した際の情報をコピーする。そして、この情報、たとえば「富士太郎」は、文書作成プログラム13で文書の中に置換される。

【0020】以上のように、図7に示すステップ72のルール実行部を実行した結果、ステップ73に戻る。すなわち、ステップ73では、ルール処理手段131が、「キー」の属性は、画像データであるか否かを調べる。「キー」の属性が画像データであれば、ステップ74に進み、画像データでなければ、ステップ76に進む。ステップ74では、画像データ変換手段132がルールの戻り値のイメージデータを文書データファイル141のフォーマットに変換する。ステップ75では、画像データ変換手段132によって変換したファイルの内容をデータ置換手段134が文書データファイル141にコピーし、その後、処理は終了する。ステップ76では、「キー」の属性が画像データでない場合、ルールに従って変換した値をデータ置換手段134が文書データファイル141にコピーする。そして、文書データファイル141内のデータは、通常の文書編集可能な形に変換されて文書ファイル142に格納される。したがって、当該文書ファイル142に格納されたデータは、文書出力部153のプリンタ等により、オペレータの手を煩わすことなく定型文書が自動的に作成される。

【0021】以上の実施例には、データ通信手段として共有メモリ空間を介してプロセス間通信を行うものを説明したが、変形例としては、共有メモリ空間を使用せずに、プロトコルを使用して、内部またはLAN等の通信線を介して外部の業務プログラムと通信を行うデータ通信手段も使用でき、同様の効果が得られるのは明らかである。また、本実施例の定型文書作成装置では、文書フ

ァイル作成後に、その文書をディスプレイ上のウィンドウに表示したり、キーボードやマウスを用いてその文書を編集したり、付属のプリンタに対してプリントアウトすることができる。

【0022】

【発明の効果】本発明によれば、「キー」情報を備えた第1ファイルの「キー」情報を基に、第2ファイルのルールにしたがって、業務プログラムが前記「キー」情報に対応した情報を算出して文書作成装置（文書作成プログラム）に送るので、オペレータは、業務プログラム等の起動だけで、各種情報を一々挿入しながら定型文書を作成する必要がない。したがって、本発明の定型文書作成装置は、各種の第1ファイルと第2ファイルとを準備しておけば、オペレータが介在することなく、簡単に定型文書を作成することができる。

【図面の簡単な説明】

【図1】 本発明における定型文書作成装置の一実施例を説明するためのブロック構成図である。

【図2】 本実施例における定型文書作成装置によって作成された定型文書の一例を説明するための図である。

【図3】 図2に示す文書のマスターファイルの一例を示す図である。

【図4】 共有メモリ空間が業務プログラムと文書作成プログラムとのワーキングメモリとして働くことを説明するための図である。

【図5】 文書作成プログラムにおいて、定型文書の置換部分をどのように置き換えるかについて説明するためのルールファイルを示す。

【図6】 本実施例における検索手段のフローチャートである。

【図7】 文書作成プログラムと業務プログラムとの間におけるデータ通信手段を介した処理の流れの一例を示すフローチャートで、図6に示すステップ64の詳細を示すものである。

【図8】 文書作成プログラムにおける処理の流れの一例を示す。

【図9】 業務プログラムにおける処理の流れの一例を示す。

【符号の説明】

11・・・業務プログラム	14・・・格納部
12・・・データ通信手段	15・・・入出力部
13・・・文書作成プログラム	
121・・・共有メモリ空間	141・・・文書データファイル
131・・・ルール処理部	142・・・文書ファイル
132・・・画像データ変換手段	143・・・マスターファイル

133・・・文生成手段
ルールファイル

134・・・データ置換手段
文書編集部

144・・・

151・・・

135・・・検索手段

文書表示部

136・・・データ作成手段

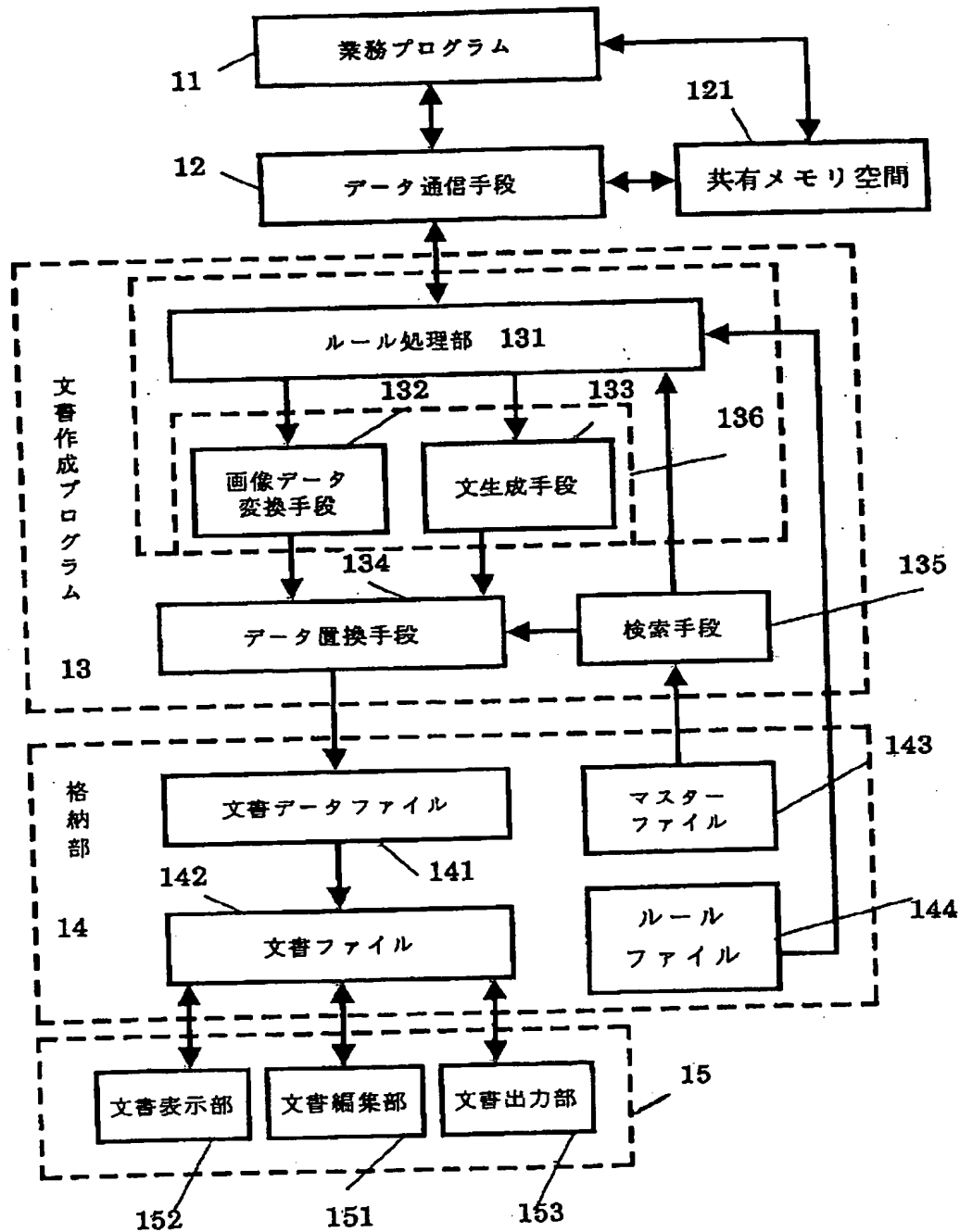
文書出力部

152・・・

153・・・

【図1】

図1



【図2】

図2

19910412-123

5. 個別ライフイベント資金配分についての基本的な考え方

5.1. 収入と支出

■支出

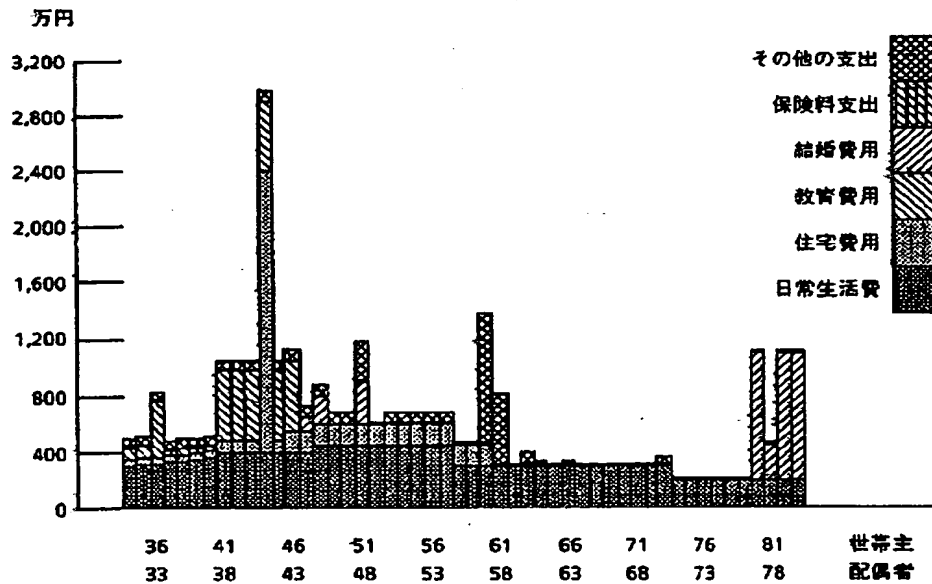
富士太郎様のご希望の老後の生活費は、月額30万円です。この金額全てを賄うためには退職時点で7,109万円の資金が必要となります。

しかし、富士太郎様の老後におきましては、公的年金等の収入がありますので、老後の生活費用の一部を補填することができます。

■収入

富士太郎様の場合、第3章の確認項目に基づき、公的年金、企業年金、個人年金、受取保険金などの一時収入の合計が5,695万円(月額24.5万円)があると予測されます。

これらの、収入と支出をグラフにすると以下の通りです。



{図3}

図3

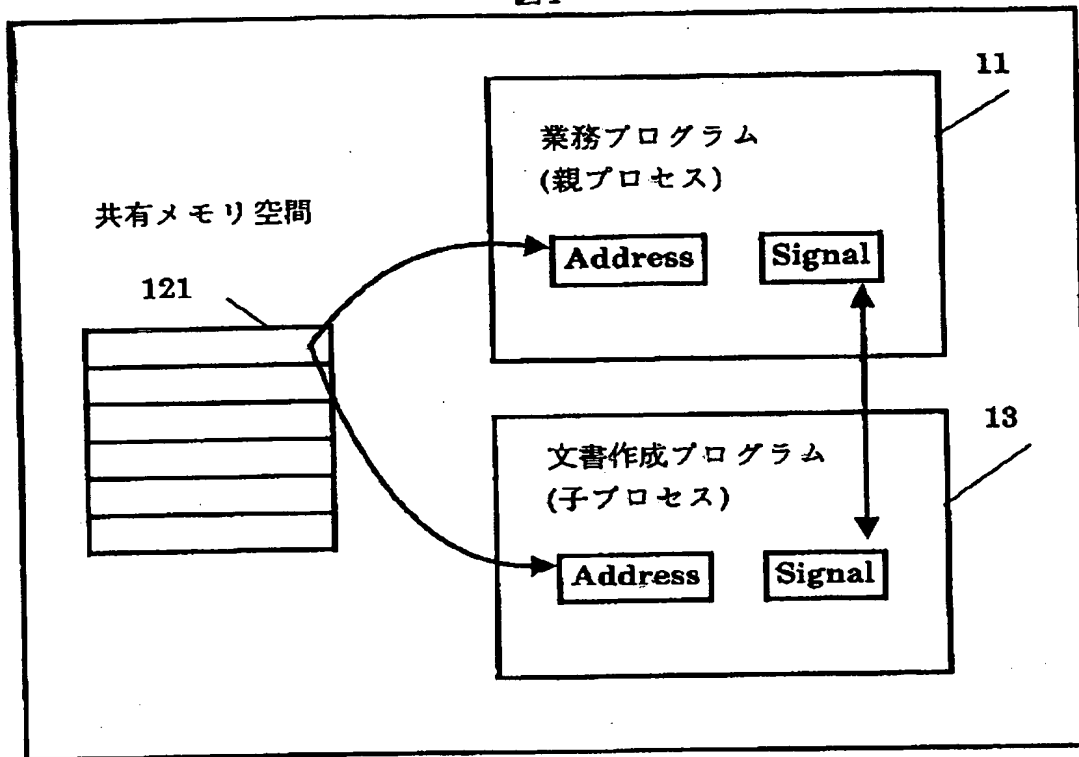
```

Para{Para{0,1,0,0,0,12,18,0}, Tabs{003000c000f001380180}}
Text{Font{0,14,0,0,0,0,0}, String{5.~L個別ライフイベント資金配分についての基本的な考え方}}
Para{Para{0,1,0,0,0,12,18,0}, Tabs{003000c000f001380180}}
Text{Font{0,12,0,0,0,0,0}, String{5.1.~L収入と支出}}
Para{Para{0,1,0,0,0,12,18,0}, Tabs{003000c000f001380180}}
Text{Font{0,12,0,0,0,0,0}, String{~L支出}}
Para{Para{0,1,0,0,0,12,18,0}, Tabs{003000c000f001380180}}
Text{Font{0,12,0,0,0,0,0}, String{~L  ~L$$$STR1様のご希望の老後の生活費は、月額$$$NUM1万円です。この金額全
てを賄うためには退職時点で$$$NUM2万円の資金が必要となります。
  しかし、$$$STR1様の老後におきましては、$$$STR2}}
Para{Para{0,1,0,0,0,12,18,0}, Tabs{003000c000f001380180}}
Text{Font{0,12,0,0,0,0,0}, String{~L収入}}
Para{Para{0,1,0,0,0,12,18,0}, Tabs{003000c000f001380180}}
Text{Font{0,12,0,0,0,0,0}, String{~L$$$STR1様の場合、第3章の確認項目に基づき、$$$STR3などの一時収入の合計が}}
Text{Font{0,12,0,0,0,2,0}, String{$$$NUM3}}
Text{Font{0,12,0,0,0,0,0}, String{(月額$$$NUM4万円)があると予測されます。}}
Para{Para{0,1,0,0,0,12,18,0}, Tabs{003000c000f001380180}}
Text{Font{0,12,0,0,0,0,0}, String{~Lこれらの、収入と支出をグラフにすると以下の通りです。}}
Para{Para{0,1,0,0,0,12,18,0}, Tabs{003000c000f001380180}}
Text{Font{0,12,0,0,0,0,0}, String{$$$INCOME__GRAPH}}
Break{Type{0}}

```

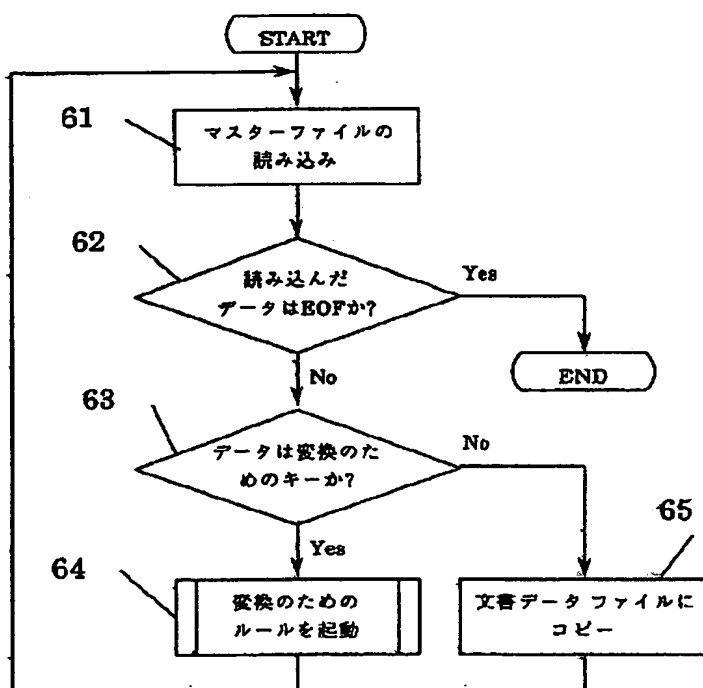
【図4】

図4



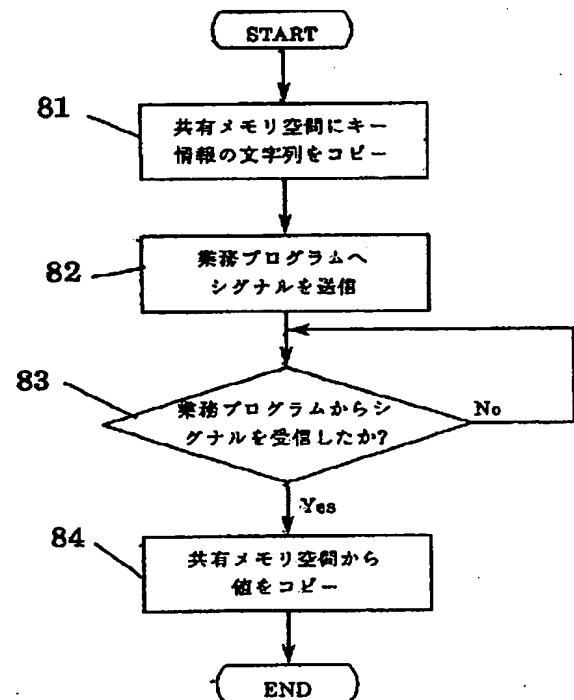
【図6】

図6



【図8】

図8



{図5}

図5

```
STR1::
    GetMessage_Str(USER_NAME, sval);
    return(sval);

STR2::
    GetMessage_Num(SILVER_INCOME, nval);
    GetMessage_Str(SILVER_MAIN_INCOME, sval);
    if (nval == 1)
        return(MakeSentence(sval, "等の収入がありますので、老後の生活費用
の一部を補填することができます。"));
    else
        return(第3章の確認項目で収入のご記入がありませんでしたので、ないものと
して計算してあります。);

STR3::
    GetMessage_Str(SILVER_MAIN_INCOME, sval);
    GetMessage_List(SILVER_OTHER_INCOME, lval);
    if (lval == 0)
        return(sval);
    else
        return(MakeSentence(sval, lval));

NUM1::
    GetMessage_Num(SILVER_COST_M, nval);
    return(nval);

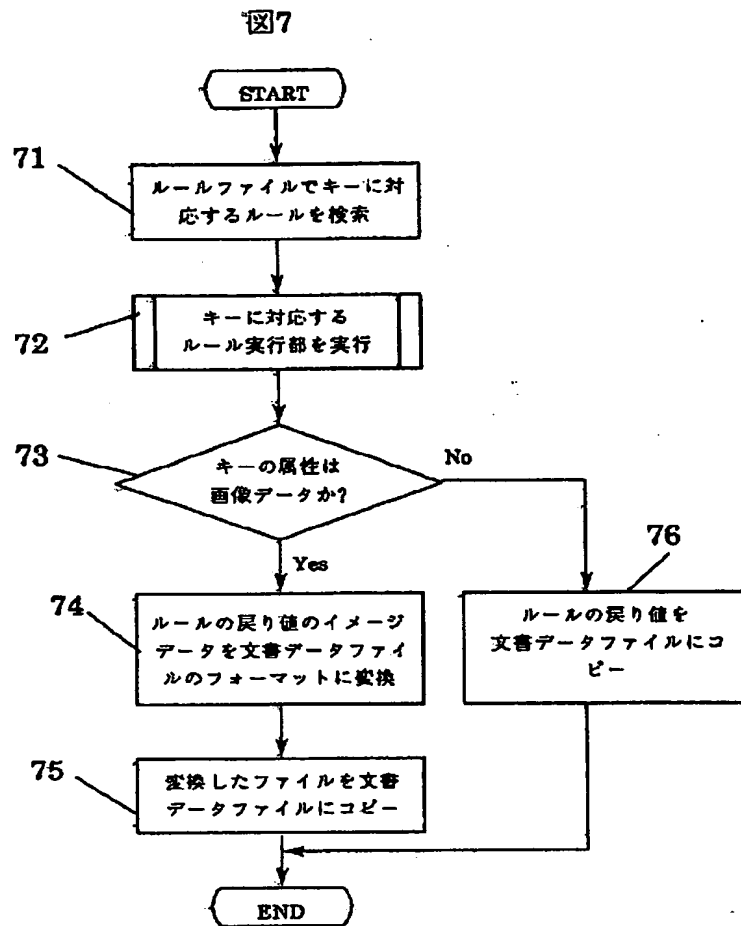
NUM2::
    GetMessage_Num(SILVER_FUND, nval);
    return(nval);

NUM3::
    GetMessage_Num(SILVER_ALL_INCOME, nval);
    return(nval);

NUM4::
    GetMessage_Num(SILVER_INCOME_M, nval);
    return(nval);

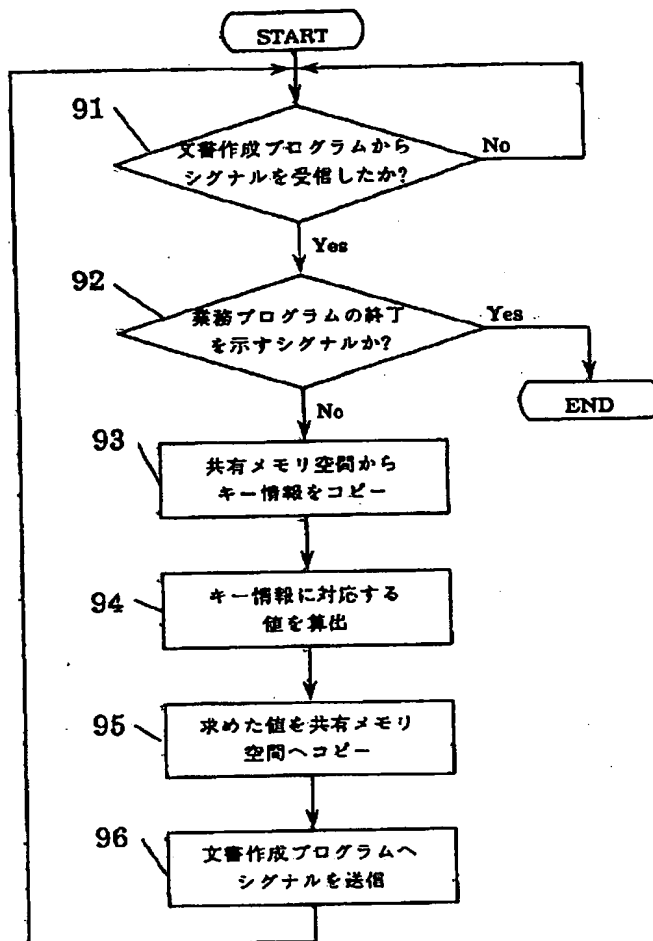
INCOME_GRAPH::
    Convert_bm(INCOME_BM, income_graph.idf);
    return("income_graph.idf");
```

{図7}



{図9}

図9



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PATENT ABSTRACTS OF JAPAN

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{43}Date of publication of application : 30.04.1993

{51}Int.Cl.

G06F 15/20

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{21}Application number : 03-296654

{71}Applicant : FUJI XEROX CO LTD

{22}Date of filing : 17.10.1991

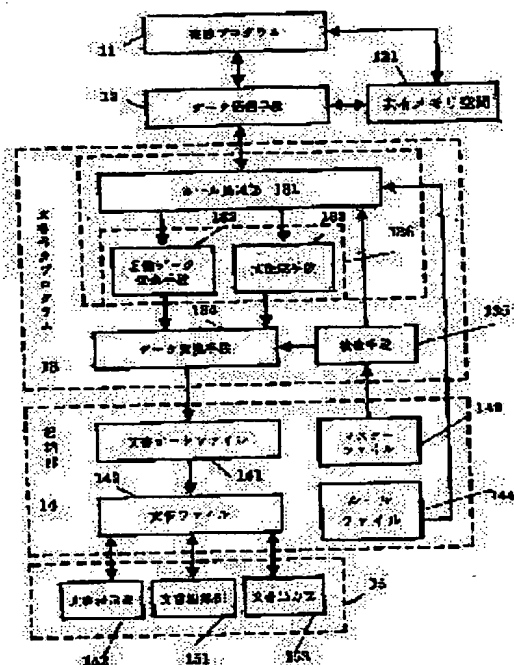
{72}Inventor : HONMA MITSURU

{54} ROUTINE DOCUMENT PREPARING DEVICE

{57}Abstract:

PURPOSE: To automatically prepare a routine document without an operator's operation by only actuating to a document preparing program from a work program by constituting the device so that a rule related to generation of a sentence and a rule for executing the format conversion of image data can be applied to the document preparing program.

CONSTITUTION: In a storage means 14, a first file 143 in which a routine document containing format information given a 'key' to a document element to be substituted is described, and a second file 144 in which a rule to be processed at every kind of the 'key' in advance is described are stored. In such a state, the 'key' is retrieved from a first file 143 by a retrieving means 135, and in order to obtain data corresponding to the 'key' by referring to the rule of a second file 144, a processing for inquiry to a work program 11 is executed. Data of a document element to be substituted, obtained, based on its result is substituted to the corresponding substitution part by a substituting means 134.



LEGAL STATUS

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[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] It is fixed form document preparation equipment which is equipped with the means of communications which asks to a user program, and draws up a fixed form document based on the inquiry result. The 1st file which described the fixed form document including the format information which gave the "key" to the document element which should be permuted, A storage means to memorize the 2nd file which described the regulation which should be beforehand processed for every class of above "a key", A retrieval means to search a "key" from the 1st file within said storage means, With reference to the regulation of the 2nd file within said storage means, said means of communications is minded based on the regulation corresponding to the "key" of the retrieval result of said retrieval means. A processing means to perform processing for asking a user program the information corresponding to a "key", A data origination means to create the data of the document element which should be permuted from the data obtained based on the inquiry result of the processing means concerned, Fixed form document preparation equipment characterized by providing a permutation means to permute the data of the document element created with the data origination means concerned by the permutation part corresponding to a "key."

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to suitable fixed form document preparation equipment to draw up the standardized document with respect to the document preparation equipment which operates on OS to which multi-processes, such as UNIX, can work. In addition, in this specification, a "document" does not mean only the sentence which consists only of an alphabetic character, but the document which inserts an image, a graph, a table, etc. into a document and is drawn up is included.

[0002]

[Description of the Prior Art] Conventionally, with this kind of document preparation equipment, when drawing up a document with objects, such as a text, drawing, and a graph, and an operator inputted data into the specific part in a document or started other user programs, the fixed form document was drawn up based on the value processed by that program. As such document preparation equipment, there are some which are indicated by JP,1-211067,A, for example. Moreover, with another document preparation equipment, it was partially contained in the fixed form document, the variable region which changes written contents for every fixed form document of that was prepared, and the fixed form document was automatically completed by embedding a corresponding standard unit to this variable region. As such document preparation equipment, there are some which are indicated by JP,1-231162,A, for example.

[0003]

[Problem(s) to be Solved by the Invention] With the document preparation equipment indicated by above-mentioned JP,1-211067,A, it was not considered at all about an operator drawing up a lot of fixed form documents by batch processing etc. at the time of an absence. Therefore, in case a document was drawn up with the above-mentioned conventional technique, actuation, such as a call of the document of a format with which the operator had to be in the document preparation equipment side, and was always decided, and starting of the manual entry of data and other user programs, was required. Moreover, with the document preparation equipment indicated by JP,1-231162,A, the standard unit which consists of each, such as document data, image data, and numeric data, had to be prepared altogether beforehand, and a fixed form document was not able to be drawn up using the document data currently beforehand created by other user programs, image data, or numeric data.

[0004] This invention solves the above technical problems, only starts a document preparation program from a user program, and aims at offering the fixed form document preparation equipment which performs automatic creation of a fixed form document without actuation of an operator.

[0005]

[Means for Solving the Problem] In order to attain said purpose, the document preparation equipment of this invention It has the means of communications (12 of drawing 1) which asks to a user program (11 of drawing 1). The 1st file which described the fixed form document including the format information which gave the "key" to the document element which should draw up a fixed form document based on the inquiry result, and should be permuted (143 of drawing 1), A storage means to memorize the 2nd file (144 of drawing 1) which described the regulation which should be beforehand processed for every class of above "a key" (14 of drawing 1), A retrieval means to search a "key" from the 1st file (143) memorized by the storage means (14) concerned (135 of drawing 1), With reference to the regulation of the 2nd file (144) memorized by said storage means

(14), said means of communications (12) is minded based on the regulation corresponding to the "key" of the retrieval result of said retrieval means (135). A processing means to perform processing for asking a user program (11) the information corresponding to a "key" (131 of drawing 1), A data origination means to create the data of the document element which should be permuted from the data obtained based on the inquiry result of the processing means (131) concerned (132 of drawing 1, 133), It consists of permutation means (134 of drawing 1) to permute the data of the document element created with the data origination means (132 133) concerned by the permutation part corresponding to a "key."

[0006]

[work —] for The 1st file which described the fixed form document which includes the format information which gave the "key" to the document element which should be permuted in a fixed form document in a storage means, for example, a master file, and the 2nd file which described the regulation which should be processed for every class of above "a key" are memorized, respectively. A retrieval means searches the "key" currently embedded at the 1st file memorized by the above-mentioned storage means. A processing means is asked to a user program through said means of communications based on the regulation corresponding to the "key" which it is as a result of [of said retrieval means] retrieval with reference to the regulation of the 2nd file memorized by said storage means, for example, the Ruhr file. In a user program, the information corresponding to the above "a key" is computed and a processing means is returned through said data communication means. A data origination means creates the data of the document element which was obtained from the user program as an inquiry result of said processing means and which should be permuted. And a data permutation means permutes desired data by the part of the document element corresponding to a "key" with the data which said data origination means created. As for the document element data obtained from a user program, character-string data, numeric data, image data, etc. are contained. A fixed form document is drawn up automatically, without operating giving a command for an operator taking out the data computed by other user programs one by one, and inserting them into a document element etc., if the 1st file and the 2nd file for drawing up a desired fixed form document as mentioned above are created beforehand.

[0007]

[The example of fruit **] Drawing 1 is a block block diagram for explaining one example of the fixed form document preparation equipment in this invention. The user program 11 to which fixed form document preparation equipment creates document element data, such as character-string data, numeric data, or image data, in drawing 1 R> 1, The document element data created by the user program 11 concerned by the demand from a document preparation program The data communication means 12 for incorporating from a user program 11, and the document preparation program 13 which draws up a fixed form document based on the document element data created by the user program 11 concerned, It consists of the storing section 14 which stores various files required for fixed form document preparation equipment, and the I/O section 15 which outputs the document concerned while drawing up / editing a document. The data communication means 12 for exchanging data between the above-mentioned user program 11 and the document preparation program 13 is performed through the shared memory space 121. The above-mentioned document-preparation program 13 consists of the Ruhr processing section 131 which processes in order to draw up a document according to the Ruhr of the below-mentioned Ruhr file 144, a data permutation means 134 replaced with the document data which created the permutation part in a fixed form document, or image data, a retrieval means 135 search the permutation part in the below-mentioned master file, and a data origination means 136 draw up an image or a document. Moreover, the above-mentioned data origination means 136 consists of an image data-conversion means 132 to change into a format of a document data file the image data obtained by the above-mentioned data communication means 12, and a sentence generation means 133 for generating document data from the character-string data obtained by the above-mentioned data communication means 12, and numeric data. The document data file 141 stored in the form of a middle format of the document with which the storing section 14 was created by the document preparation program 13, The text file 142 which changes and stores the data of the document data file 141 concerned in the form in which the usual document edit is possible, The master file 143 which consists of each attribute of the graphic form and image in each format information, such as an alphabetic character, a paragraph, a page, etc. which embedded

the "key" for changing a fixed form sentence into the document, or a document. It consists of Ruhr files 144 in which the Ruhr for the Ruhr processing section 131 to process for document preparation is stored. The input section which the I/O section 15 consists of a keyboard or a mouse etc. which is not illustrated, and inputs information, such as various data and directions information. It consists of the document editorial department 151 which is based on input from the input section etc., and draws up / edits a document etc., a document display 152 for displaying the document drawn up / edited by the document editorial department 151, and the document output section 153 for outputting the drawn-up document by a printer etc.

[0008] Drawing 2 is drawing for explaining an example of the fixed form document drawn up by the fixed form document preparation equipment in this example. An example of the fund allocation for standing a life design is shown in the document "5. the fundamental view about individual LIFE event fund allocation" shown in drawing 2 with the graph. The above fixed form documents are made, and a name, an item, and the amount of money differ from an explanatory note etc. by every customer to ship this to those who are carried by the customer list. And it is a serious activity for an operator to call the data of name and others of each customer which are stored in the database of a user program 11 etc. one by one, and to insert them in the document of drawing 2. For example, the fixed form document shown in drawing 2 was a document for shipping to "Taro Fuji" stored in data **SU of a user program 11, and in order to draw up this document, actuation for filling in an item, the amount of money, an explanatory note, etc. about Taro Fuji computed from data **SU as the name "Taro Fuji" was performed by the operator. Then, the fixed form document preparation equipment of this example is for abolishing the activity in which an operator inserts the above-mentioned name, an item, the amount of money, an explanatory note, etc. one by one. That is, the fixed form document preparation equipment of this example has the master file 143 shown in drawing 3, and the Ruhr file 144 shown in drawing 5, and draws up a fixed form document as shown in drawing 2 in permuting the value of a master file 143 by the value [**** / respectively] according to the Ruhr of this Ruhr file 144.

[0009] Drawing 3 is drawing showing an example of the master file of the document shown in drawing 2. A predetermined document is drawn up at the same time it embeds a "key" into the part permuted beforehand, and the master file 143 shown in drawing 3 is stored in the storing section 14. For example, this master file 143 consists of each attribute of the graphic form and image in each format information on the alphabetic character, paragraph, and page which embedded the "key" for permuting, or a document. The type of the line is expressed with the first four characters of a master file in this drawing. For example, "Para" is data showing a paragraph attribute and expresses the attribute in the figure indicated in the subsequent parenthesis. "Tabs" means character spacing and expresses the attribute in the figure indicated in the subsequent parenthesis. "Text{Font[" means text and expresses attributes, such as the graphic size, font, etc., in the figure indicated in the subsequent parenthesis. "String" expresses the character string used as a fixed form document. "Brek [Type [0]]" means form feed information. "Page" is data showing page format information. "\$\$" means the beginning of the "key" of this invention, and the subsequent alphabet is a "key." for example, — since "STR2" has incomes, such as a character string "public pension, in a character string "Taro Fuji" as for "STR1" it can fill up — " — it corresponds to a graph [in / "NUM1" and / in "INCOME GRAPH" / drawing 2], respectively. [a figure "30"]

[0010] Drawing 4 is drawing for explaining that shared memory space works as a working memory of a user program and a document preparation program. In drawing 4, the document preparation program 13 is started as a child process of a user program 11, and is set in the condition that a user program 11 can be started as initial setting. Before a user program 11 starts the document preparation program 13, on the main memory for performing a user program 11, with the data communication means 12, it secures the shared memory space 121 and holds the address inside. Then, a user program 11 starts the document preparation program 13, and tells the address of the shared memory space 121 to the document preparation program 13 which is a child process through the data communication means 12. Thereby, the shared memory space 121 can be accessed from both of the processes. The character-string data with which the data communication of a user program 11 and the document preparation program 13 was computed by the user program 11, numeric data, image data, etc. are sent to the document preparation program 13 through the data communication means 12. in the case of character-string data or numeric data, these data remain as they are by the

sentence generation means 133 — or it is processed and is sent out to the data permutation means 134. Moreover, by the image data-conversion means 132, in the case of image data, it is changed into the format which can be processed with the data permutation means 134, and it is sent out to the data permutation means 134. And with the data permutation means 134, it replaces by the above-mentioned data which received the part of the conversion "a key" searched with the retrieval means 135 from the user program 11 through the data origination means 136, and this is copied to the document data file 141.

{0011] Drawing 5 shows the Ruhr file for explaining how the permutation part of a fixed form document is replaced in a document preparation program. Here, the activation section of the Ruhr corresponding to it is performed based on ""the key 1 extracted with the retrieval means 135", for example, "STR", STR2", "NUM1", etc. In the activation section of the Ruhr, since the function of the usual C can be described, the function which takes out character-string data and numeric data from a user program 11, and the function which converts image data are prepared. Delivery of the data between this process is performed using the shared memory space 121 and the signal which are shown in drawing 4.

{0012] In drawing 5, when the condition part corresponding to a "key" matches in the condition part of the Ruhr file 144, the activation section is performed. First, the example which permutes directly the character-string data received from the user program 11 is explained. In the Ruhr processing section 131, if "STR1" enters as a "key", the condition part of the Ruhr file 144 will be searched, and the corresponding activation section will be specified and performed. That is, while performing the function "GetMessage_Str" and writing "USER NAME" in the shared memory space 121, "Taro Fuji" who received through the shared memory space 121 and received the user name, for example, "Taro Fuji", to the variable "sval" is substituted from a user program 11 through the data communication means 12 by notifying having written in through the data communication means 12. By the sentence generation means 133, this assigned value is sent to the data permutation means 134 as a returned value, and is copied to the document data file 141.

{0013] Next, the example which processes the character-string data received from the user program 11 is explained. In the Ruhr processing section 131, if "STR2" enters as a "key", the condition part of the Ruhr file 144 will be searched, and the corresponding activation section will be specified and performed. For example, by the Ruhr file 144 of drawing 5, by performing the function "GetMessage_Num", processing writing "SILVERINCOME" in the shared memory space 121 etc. like the case of "STR1", and asking a user program 11, "the information on whether there is any income of old age, "1", and "0" are obtained from a user program 11 through the data communication means 12, and it substitutes for the variable "nval". [for example,] Next, the function "GetMessage_Str" is performed and it asks similarly a user program 11 by processing which writes "SILVER MAIN INCOME" in the shared memory space 121. Consequently, the item of the main incomes of old age, for example, a "public pension", is acquired through data communication means 12 grade, and it substitutes for the variable "sval." When the value of "nval" is "1", the function "MakeSentence" is performed, a character string is generated combining the variable "sval", and other arguments, and it is returned as a return value. namely, the sentence generation means 133 — the value "a public pension" of "sval" — " — since there is an income of a grade of old age — it may fill up — " — it is combined and is sent out to the data permutation means 134. If "nval" is "0" when other namely, it will be sent ["since there was no income by the check item of Chapter 3, it has calculated as what is not", and] out as it is to the data permutation means 134. Then, the character string generated by the data permutation means 134 with the sentence generation means 133 is copied to the document data file 141 of an intermediate form.

{0014] Next, the example of numeric data is explained. In the Ruhr processing section 131, if "NUM1" enters as a "key", the condition part of the Ruhr file 144 will be searched, and the corresponding activation section will be specified and performed. For example, the function "GetMessage_Num" is performed, and the value (the example of drawing 2 monthly amount of the living expenses of old age) of "SILVER COST M" is similarly acquired from a user program 11 using the data communication means 12, and it substitutes for the variable "nval." Finally, the example of image data is explained. In the Ruhr processing section 131, if "INCOME_GRAPH" enters as a "key", the bit map data about the whole life income and outgo which created "INCOMEBM" by the user program 11 through the data communication means 12 similarly by transmitting to a user program 11 through the shared memory

space 121 will be obtained. For example, the file name containing corresponding image data is received through the shared memory space 121, and the file name is returned as a return value. And the image data-conversion means 132 changes the contents of the file name into an intermediate form, and copies them to the document data file 141 through the data permutation means 134. The above actuation is repeated and the document data file 141 of an intermediate form is created. After that, it changes into the form in which the usual document edit is possible from the document data file 141 of an intermediate form, and a text file 142 is created.

[0015] Next, the actuation about the document preparation of fixed form document preparation equipment is explained with reference to drawing 6 thru/or drawing 9. Drawing 6 is the flow chart of the retrieval means in this example. At step 61, the retrieval means 135 reads the data of the master file 143 shown in drawing 3 a party every. At step 62, it investigates whether the above-mentioned retrieval means 135 read the data of all the lines of a master file 143. When all the lines of a master file 143 are not read, it progresses to step 63, and reading is ended when all the lines of a master file 143 are read. At step 63, it investigates whether "STR1" etc. shown in "the key for conversion [to every data of the line read with the retrieval means 135] into it", for example, drawing 3, is contained. If the "key" for conversion is contained, it progresses to step 64, and if the "key" for conversion is not contained, it will progress to step 65. At step 64, the Ruhr file 144 for replacing the "key" for conversion of the Ruhr processing section 131 so that it may become a predetermined document is read, and the Ruhr is started. That is, the "key" embedded in the document is searched with the retrieval means 135, and processing of delivery and drawing 7 mentioned later is performed in this to the Ruhr processing section 131. Then, the next line of return and a master file 143 is read into step 61, and it continues until the line of the last of a file finishes (EOF=End Of File) reading this. At step 65, when there is "no key" for conversion by inspection of step 63, the character string of the line etc. is copied to the document data file 141 as it is through the data permutation means 134.

[0016] Next, step 64 shown in drawing 6 is explained to a detail with reference to drawing 7 R> 7. That is, in step 64, if the "key" for conversion is searched and the Ruhr for conversion is started, the Ruhr processing section 131 will read the Ruhr file 144 shown in drawing 5 R> 5, and will perform a user program 11 and data communication through the data communication means 12 according to description of the activation section. Drawing 7 is the flow chart which shows an example of the flow of processing through the data communication means between a document preparation program and a user program, and shows the detail of step 64 shown in drawing 6. Drawing 8 shows an example of the flow of the processing in a document preparation program. Drawing 9 R> 9 shows an example of the flow of the processing in a user program. And in case the flow chart shown in drawing 8 and drawing 9 performs the Ruhr in step 72 shown in drawing 7, it is the flow of the processing performed between a user program 11 and the document preparation program 13. First, the Ruhr processing section 131 searches the Ruhr corresponding to a "key" with step 71 by the Ruhr file 144. At step 72, the Ruhr processing section 131 performs the Ruhr activation section corresponding to a "key" according to said searched Ruhr.

[0017] That is, the flow chart of drawing 8 which shows activation of the Ruhr activation section, and drawing 9 is explained. At step 81, processing to which the Ruhr processing section 131 copies the "key" information retrieved by the retrieval means 135 to the shared memory space 121 through the data communication means 12 is performed. For example, when "key" information is "STR1", in the case of "USER NAME" and "STR2", "SILVER INCOME" etc. is copied in the shared memory space 121. At step 82, the signal which tells that the Ruhr processing section 131 copied the above-mentioned character string to the user program 11 through the data communication means 12 in the shared memory space 121 is transmitted.

[0018] The processing by the side of the user program 11 which received the above-mentioned signal is explained according to the flow chart of drawing 9. At step 91, it investigates whether the signal from the document preparation program 13 was received. This investigation is continued until a signal comes from the document preparation program 13. If said signal is received, it will progress to step 92. At step 92, it investigates whether said signal is a signal in which termination of a user program 11 is shown. After the business of a user program 11 is completed, when the signal of termination is obtained, processing is ended and the signal of termination does not come out, it progresses to the following step. At step 93, it is sent from the document preparation program 13, and the "key" information temporarily stored in the shared memory space 121 is copied. For example, "USER

NAME" or "SILVER INCOME" is copied by the user program 11. At step 94, the value corresponding to the aforementioned "a key" information is computed by the user program 11. For example, the value corresponding to a character string is read among the data currently held by processing ending, or predetermined processing is performed from a character string, and let the processing result be a calculation result. At step 95, said information which was computed and was searched for is copied to the shared memory space 121. This information is equivalent to the "key" information created and stored by the user-program 11 side, and has the file name into which image data, such as character strings, such as "Taro Fuji", "1", and "0", a numeric value, or a graph, went. At step 96, the signal in which it is shown that the information corresponding to "key" information was stored in the shared memory space 121 is transmitted to the document preparation program 13.

[0019] The processing by the side of the document preparation program 13 which received the above-mentioned signal is again returned and explained to the flow chart of drawing 8. At step 83, it investigates whether the Ruhr processing section 131 received the signal of said step 96 from the user program 11. This investigation is continued until a reply signal comes. At step 84, the information at the time of a user program 11 storing in the shared memory space 121 in said step 95 is copied. And this information, for example, "Taro Fuji", is permuted in a document by the document preparation program 13.

[0020] As mentioned above, as a result of performing the Ruhr activation section of step 72 shown in drawing 7, it returns to step 73. That is, at step 73, the Ruhr processing means 131 investigates whether the attribute of a "key" is image data. If the attribute of a "key" is image data, it will progress to step 74, and if it is not image data, it will progress to step 76. At step 74, the image data-conversion means 132 changes the image data of the return value of the Ruhr into a format of the document data file 141. At step 75, the data permutation means 134 copies the contents of the file changed with the image data-conversion means 132 to the document data file 141, and processing is ended after that. At step 76, when the attribute of a "key" is not image data, the data permutation means 134 copies the value changed according to the Ruhr to the document data file 141. And the data in the document data file 141 are changed into the form in which the usual document edit is possible, and are stored in a text file 142. Therefore, a fixed form document is drawn up automatically, without the data stored in the text file 142 concerned troubling an operator's hand by the printer of the document output section 153 etc.

[0021] Although what performs interprocess communication through shared memory space as a data communication means was explained to the above example, it is clear that use a protocol as a modification, without using shared memory space, can also use the data communication means which communicates with an external user program through communication wires, such as the interior or LAN, and the same effectiveness is acquired. Moreover, with the fixed form document preparation equipment of this example, after text file creation, the document can be displayed on the window on a display, or can be printed [**** / editing the document] out to an attached printer using a keyboard or a mouse.

[0022]

[Effect of the Invention] Since a user program computes the information corresponding to the aforementioned "a key" information and sends to document preparation equipment (document preparation program) according to the Ruhr of the 2nd file based on the "key" information on the 1st file equipped with "key" information according to this invention, an operator is only starting of a user program etc., and he does not need to draw up a fixed form document, inserting various information one by one. Therefore, the fixed form document preparation equipment of this invention can draw up a fixed form document easily, without an operator intervening, if various kinds of 1st file and 2nd file are prepared.

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TECHNICAL FIELD

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PRIOR ART

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EFFECT OF THE INVENTION

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TECHNICAL PROBLEM

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[0004] This invention solves the above technical problems, only starts a document preparation program from a user program, and aims at offering the fixed form document preparation equipment which performs automatic creation of a fixed form document without actuation of an operator.

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MEANS

[Means for Solving the Problem] In order to attain said purpose, the document preparation equipment of this invention has the means of communications (12 of drawing 1) which asks to a user program (11 of drawing 1). The 1st file which described the fixed form document including the format information which gave the "key" to the document element which should draw up a fixed form document based on the inquiry result, and should be permuted (143 of drawing 1). A storage means to memorize the 2nd file (144 of drawing 1) which described the regulation which should be beforehand processed for every class of above "a key" (14 of drawing 1). A retrieval means to search a "key" from the 1st file (143) memorized by the storage means (14) concerned (135 of drawing 1). With reference to the regulation of the 2nd file (144) memorized by said storage means (14), said means of communications (12) is minded based on the regulation corresponding to the "key" of the retrieval result of said retrieval means (135). A processing means to perform processing for asking a user program (11) the information corresponding to a "key" (131 of drawing 1). A data origination means to create the data of the document element which should be permuted from the data obtained based on the inquiry result of the processing means (131) concerned (132 of drawing 1, 133). It consists of permutation means (134 of drawing 1) to permute the data of the document element created with the data origination means (132 133) concerned by the permutation part corresponding to a "key."

[0006]

[work —] for The 1st file which described the fixed form document which includes the format information which gave the "key" to the document element which should be permuted in a fixed form document in a storage means, for example, a master file, and the 2nd file which described the regulation which should be processed for every class of above "a key" are memorized, respectively. A retrieval means searches the "key" currently embedded at the 1st file memorized by the above-mentioned storage means. A processing means is asked to a user program through said means of communications based on the regulation corresponding to the "key" which it is as a result of [of said retrieval means] retrieval with reference to the regulation of the 2nd file memorized by said storage means, for example, the Ruhr file. In a user program, the information corresponding to the above "a key" is computed and a processing means is returned through said data communication means. A data origination means creates the data of the document element which was obtained from the user program as an inquiry result of said processing means and which should be permuted. And a data permutation means permutes desired data by the part of the document element corresponding to a "key" with the data which said data origination means created. As for the document element data obtained from a user program, character-string data, numeric data, image data, etc. are contained. A fixed form document is drawn up automatically, without operating giving a command for an operator taking out the data computed by other user programs one by one, and inserting them into a document element etc., if the 1st file and the 2nd file for drawing up a desired fixed form document as mentioned above are created beforehand.

[0007]

[The example of fruit **] Drawing 1 is a block block diagram for explaining one example of the fixed form document preparation equipment in this invention. The user program 11 to which fixed form document preparation equipment creates document element data, such as character-string data, numeric data, or image data, in drawing 1 R> 1, The document element data created by the user program 11 concerned by the demand from a document preparation program The data communication

means 12 for incorporating from a user program 11, and the document preparation program 13 which draws up a fixed form document based on the document element data created by the user program 11 concerned. It consists of the storing section 14 which stores various files required for fixed form document preparation equipment, and the I/O section 15 which outputs the document concerned while drawing up / editing a document. The data communication means 12 for exchanging data between the above-mentioned user program 11 and the document preparation program 13 is performed through the shared memory space 121. The above-mentioned document-preparation program 13 consists of the Ruhr processing section 131 which processes in order to draw up a document according to the Ruhr of the below-mentioned Ruhr file 144, a data permutation means 134 replaced with the document data which created the permutation part in a fixed form document, or image data, a retrieval means 135 search the permutation part in the below-mentioned master file, and a data origination means 136 draw up an image or a document. Moreover, the above-mentioned data origination means 136 consists of an image data-conversion means 132 to change into a format of a document data file the image data obtained by the above-mentioned data communication means 12, and a sentence generation means 133 for generating document data from the character-string data obtained by the above-mentioned data communication means 12, and numeric data. The document data file 141 stored in the form of a middle format of the document with which the storing section 14 was created by the document preparation program 13, The text file 142 which changes and stores the data of the document data file 141 concerned in the form in which the usual document edit is possible, The master file 143 which consists of each attribute of the graphic form and image in each format information, such as an alphabetic character, a paragraph, a page, etc. which embedded the "key" for changing a fixed form sentence into the document, or a document, It consists of Ruhr files 144 in which the Ruhr for the Ruhr processing section 131 to process for document preparation is stored. The input section which the I/O-section 15 consists of a keyboard or a mouse etc. which is not illustrated, and inputs information, such as various data and directions information, It consists of the document editorial department 151 which is based on input from the input section etc., and draws up / edits a document etc., a document display 152 for displaying the document drawn up / edited by the document editorial department 151, and the document output section 153 for outputting the drawn-up document by a printer etc.

[0008] Drawing 2 is drawing for explaining an example of the fixed form document drawn up by the fixed form document preparation equipment in this example. An example of the fund allocation for standing a life design is shown in the document "5. the fundamental view about individual LIFE event fund allocation" shown in drawing 2 with the graph. The above fixed form documents are made, and a name, an item, and the amount of money differ from an explanatory note etc. by every customer to ship this to those who are carried by the customer list. And it is a serious activity for an operator to call the data of name and others of each customer which are stored in the database of a user program 11 etc. one by one, and to insert them in the document of drawing 2. For example, the fixed form document shown in drawing 2 was a document for shipping to "Taro Fuji" stored in data **SU of a user program 11, and in order to draw up this document, actuation for filling in an item, the amount of money, an explanatory note, etc. about Taro Fuji computed from data **SU as the name "Taro Fuji" was performed by the operator. Then, the fixed form document-preparation equipment of this example is for abolishing the activity in which an operator inserts the above-mentioned name, an item, the amount of money, an explanatory note, etc. one by one. That is, the fixed form document preparation equipment of this example has the master file 143 shown in drawing 3, and the Ruhr file 144 shown in drawing 5, and draws up a fixed form document as shown in drawing 2 in permuting the value of a master file 143 by the value [**** / respectively] according to the Ruhr of this Ruhr file 144.

[0009] Drawing 3 is drawing showing an example of the master file of the document shown in drawing 2. A predetermined document is drawn up at the same time it embeds a "key" into the part permuted beforehand, and the master file 143 shown in drawing 3 is stored in the storing section 14. For example, this master file 143 consists of each attribute of the graphic form and image in each format information on the alphabetic character, paragraph, and page which embedded the "key" for permuting, or a document. The type of the line is expressed with the first four characters of a master file in this drawing. For example, "Para" is data showing a paragraph attribute and expresses the attribute in the figure indicated in the subsequent parenthesis: "Tabs" means character spacing and

expresses the attribute in the figure indicated in the subsequent parenthesis. "Text{Font[" means text and expresses attributes, such as the graphic size, font, etc., in the figure indicated in the subsequent parenthesis. "String" expresses the character string used as a fixed form document. "Brek {Type [0]}" means form feed information. "Page" is data showing page format information. "\$\$" means the beginning of the "key" of this invention, and the subsequent alphabet is a "key." for example, — since "STR2" has incomes, such as a character string "public pension, in a character string "Taro Fuji" as for "STR1" it can fill up — " — it corresponds to a graph [in / "NUM1" and / in "INCOME GRAPH" / drawing 2], respectively. [a figure "30"]

[0010] Drawing 4 is drawing for explaining that shared memory space works as a working memory of a user program and a document preparation program. In drawing 4 , the document preparation program 13 is started as a child process of a user program 11, and is set in the condition that a user program 11 can be started as initial setting. Before a user program 11 starts the document preparation program 13, on the main memory for performing a user program 11, with the data communication means 12, it secures the shared memory space 121 and holds the address inside. Then, a user program 11 starts the document preparation program 13, and tells the address of the shared memory space 121 to the document preparation program 13 which is a child process through the data communication means 12. Thereby, the shared memory space 121 can be accessed from both of the processes. The character-string data with which the data communication of a user program 11 and the document preparation program 13 was computed by the user program 11, numeric data, image data, etc. are sent to the document preparation program 13 through the data communication means 12. in the case of character-string data or numeric data, these data remain as they are by the sentence generation means 133 — or it is processed and is sent out to the data permutation means 134. Moreover, by the image data-conversion means 132, in the case of image data, it is changed into the format which can be processed with the data permutation means 134, and it is sent out to the data permutation means 134. And with the data permutation means 134, it replaces by the above-mentioned data which received the part of the conversion "a key" searched with the retrieval means 135 from the user program 11 through the data origination means 136, and this is copied to the document data file 141.

[0011] Drawing 5 shows the Ruhr file for explaining how the permutation part of a fixed form document is replaced in a document preparation program. Here, the activation section of the Ruhr corresponding to it is performed based on ""the key 1 extracted with the retrieval means 135", for example, "STR", STR2", "NUM1", etc. In the activation section of the Ruhr, since the function of the usual C can be described, the function which takes out character-string data and numeric data from a user program 11, and the function which converts image data are prepared. Delivery of the data between this process is performed using the shared memory space 121 and the signal which are shown in drawing 4 .

[0012] In drawing 5 , when the condition part corresponding to a "key" matches in the condition part of the Ruhr file 144, the activation section is performed. First, the example which permutes directly the character-string data received from the user program 11 is explained. In the Ruhr processing section 131, if "STR1" enters as a "key", the condition part of the Ruhr file 144 will be searched, and the corresponding activation section will be specified and performed. That is, while performing the function "GetMessage_Str" and writing "USER NAME" in the shared memory space 121, "Taro Fuji" who received through the shared memory space 121 and received the user name, for example, "Taro Fuji", to the variable "sval" is substituted from a user program 11 through the data communication means 12 by notifying having written in through the data communication means 12. By the sentence generation means 133, this assigned value is sent to the data permutation means 134 as a returned value, and is copied to the document data file 141.

[0013] Next, the example which processes the character-string data received from the user program 11 is explained. In the Ruhr processing section 131, if "STR2" enters as a "key", the condition part of the Ruhr file 144 will be searched, and the corresponding activation section will be specified and performed. For example, by the Ruhr file 144 of drawing 5 , by performing the function "GetMessage_Num", processing writing "SILVERINCOME" in the shared memory space 121-etc. like the case of "STR1", and asking a user program 11, "the information on whether there is any income of old age, "1", and 0" are obtained from a user program 11 through the data communication means 12, and it substitutes for the variable "nval". [for example,] Next, the function "GetMessage_Str" is

performed and it asks similarly a user program 11 by processing which writes "SILVER MAIN INCOME" in the shared memory space 121. Consequently, the item of the main incomes of old age, for example, a "public pension", is acquired through data communication means 12 grade, and it substitutes for the variable "sval." When the value of "nval" is "1", the function "MakeSentence" is performed, a character string is generated combining the variable "sval", and other arguments, and it is returned as a return value. namely, the sentence generation means 133 — the value "a public pension" of "sval" — " — since there is an income of a grade of old age — it may fill up — " — it is combined and is sent out to the data permutation means 134. If "nval" is "0" when other namely, it will be sent ["since there was no income by the check item of Chapter 3, it has calculated as what is not", and] out as it is to the data permutation means 134. Then, the character string generated by the data permutation means 134 with the sentence generation means 133 is copied to the document data file 141 of an intermediate form.

[0014] Next, the example of numeric data is explained. In the Ruhr processing section 131, if "NUM1" enters as a "key", the condition part of the Ruhr file 144 will be searched, and the corresponding activation section will be specified and performed. For example, the function "GetMessage_Num" is performed, and the value (the example of drawing 2 monthly amount of the living expenses of old age) of "SILVER COST M" is similarly acquired from a user program 11 using the data communication means 12, and it substitutes for the variable "nval." Finally, the example of image data is explained. In the Ruhr processing section 131, if "INCOME_GRAPH" enters as a "key", the bit map data about the whole life income and outgo which created "INCOMEBM" by the user program 11 through the data communication means 12 similarly by transmitting to a user program 11 through the shared memory space 121 will be obtained. For example, the file name containing corresponding image data is received through the shared memory space 121, and the file name is returned as a return value. And the image data-conversion means 132 changes the contents of the file name into an intermediate form, and copies them to the document data file 141 through the data permutation means 134. The above actuation is repeated and the document data file 141 of an intermediate form is created. After that, it changes into the form in which the usual document edit is possible from the document data file 141 of an intermediate form, and a text file 142 is created.

[0015] Next, the actuation about the document preparation of fixed form document preparation equipment is explained with reference to drawing 6 thru/or drawing 9 . Drawing 6 is the flow chart of the retrieval means in this example. At step 61, the retrieval means 135 reads the data of the master file 143 shown in drawing 3 a party every. At step 62, it investigates whether the above-mentioned retrieval means 135 read the data of all the lines of a master file 143. When all the lines of a master file 143 are not read, it progresses to step 63, and reading is ended when all the lines of a master file 143 are read. At step 63, it investigates whether "STR1" etc. shown in "the key for conversion [to every data of the line read with the retrieval means 135] into it", for example, drawing 3 , is contained. If the "key" for conversion is contained, it progresses to step 64, and if the "key" for conversion is not contained, it will progress to step 65. At step 64, the Ruhr file 144 for replacing the "key" for conversion of the Ruhr processing section 131 so that it may become a predetermined document is read, and the Ruhr is started. That is, the "key" embedded in the document is searched with the retrieval means 135, and processing of delivery and drawing 7 mentioned later is performed in this to the Ruhr processing section 131. Then, the next line of return and a master file 143 is read into step 61, and it continues until the line of the last of a file finishes (EOF=End Of File) reading this. At step 65, when there is "no key" for conversion by inspection of step 63, the character string of the line etc. is copied to the document data file 141 as it is through the data permutation means 134.

[0016] Next, step 64 shown in drawing 6 is explained to a detail with reference to drawing 7 R> 7. That is, in step 64, if the "key" for conversion is searched and the Ruhr for conversion is started, the Ruhr processing section 131 will read the Ruhr file 144 shown in drawing 5 R> 5, and will perform a user program 11 and data communication through the data communication means 12 according to description of the activation section. Drawing 7 is the flow chart which shows an example of the flow of processing through the data communication means between a document preparation program and a user program, and shows the detail of step 64 shown in drawing 6 . Drawing 8 shows an example of the flow of the processing in a document preparation program. Drawing 9 R> 9 shows an example of the flow of the processing in a user program. And in case the flow-chart shown in drawing 8 and drawing 9 performs the Ruhr in step 72 shown in drawing 7 , it is the flow of the processing

performed between a user program 11 and the document preparation program 13. First, the Ruhr processing section 131 searches the Ruhr corresponding to a "key" with step 71 by the Ruhr file 144. At step 72, the Ruhr processing section 131 performs the Ruhr activation section corresponding to a "key" according to said searched Ruhr.

[0017] That is, the flow chart of drawing 8 which shows activation of the Ruhr activation section, and drawing 9 is explained. At step 81, processing to which the Ruhr processing section 131 copies the "key" information retrieved by the retrieval means 135 to the shared memory space 121 through the data communication means 12 is performed. For example, when "key" information is "STR1", in the case of "USER NAME" and "STR2", "SILVER INCOME" etc. is copied in the shared memory space 121. At step 82, the signal which tells that the Ruhr processing section 131 copied the above-mentioned character string to the user program 11 through the data communication means 12 in the shared memory space 121 is transmitted.

[0018] The processing by the side of the user program 11 which received the above-mentioned signal is explained according to the flow chart of drawing 9. At step 91, it investigates whether the signal from the document preparation program 13 was received. This investigation is continued until a signal comes from the document preparation program 13. If said signal is received, it will progress to step 92. At step 92, it investigates whether said signal is a signal in which termination of a user program 11 is shown. After the business of a user program 11 is completed, when the signal of termination is obtained, processing is ended and the signal of termination does not come out, it progresses to the following step. At step 93, it is sent from the document preparation program 13, and the "key" information temporarily stored in the shared memory space 121 is copied. For example, "USER NAME" or "SILVER INCOME" is copied by the user program 11. At step 94, the value corresponding to the aforementioned "a key" information is computed by the user program 11. For example, the value corresponding to a character string is read among the data currently held by processing ending, or predetermined processing is performed from a character string, and let the processing result be a calculation result. At step 95, said information which was computed and was searched for is copied to the shared memory space 121. This information is equivalent to the "key" information created and stored by the user-program 11 side, and has the file name into which image data, such as character strings, such as "Taro Fuji", "1", and "0", a numeric value, or a graph, went. At step 96, the signal in which it is shown that the information corresponding to "key" information was stored in the shared memory space 121 is transmitted to the document preparation program 13.

[0019] The processing by the side of the document preparation program 13 which received the above-mentioned signal is again returned and explained to the flow chart of drawing 8. At step 83, it investigates whether the Ruhr processing section 131 received the signal of said step 96 from the user program 11. This investigation is continued until a reply signal comes. At step 84, the information at the time of a user program 11 storing in the shared memory space 121 in said step 95 is copied. And this information, for example, "Taro Fuji", is permuted in a document by the document preparation program 13.

[0020] As mentioned above, as a result of performing the Ruhr activation section of step 72 shown in drawing 7, it returns to step 73. That is, at step 73, the Ruhr processing means 131 investigates whether the attribute of a "key" is image data. If the attribute of a "key" is image data, it will progress to step 74, and if it is not image data, it will progress to step 76. At step 74, the image data-conversion means 132 changes the image data of the return value of the Ruhr into a format of the document data file 141. At step 75, the data permutation means 134 copies the contents of the file changed with the image data-conversion means 132 to the document data file 141, and processing is ended after that. At step 76, when the attribute of a "key" is not image data, the data permutation means 134 copies the value changed according to the Ruhr to the document data file 141. And the data in the document data file 141 are changed into the form in which the usual document edit is possible, and are stored in a text file 142. Therefore, a fixed form document is drawn up automatically, without the data stored in the text file 142 concerned troubling an operator's hand by the printer of the document output section 153 etc.

[0021] Although what performs interprocess communication through shared memory space as a data communication means was explained to the above example, it is clear that use a protocol as a modification, without using shared memory space, can also use the data communication means which communicates with an external user program through communication wires, such as the interior or

LAN, and the same effectiveness is acquired. Moreover, with the fixed form document preparation equipment of this example, after text file creation, the document can be displayed on the window on a display, or can be printed [**** / editing the document] out to an attached printer using a keyboard or a mouse.

[Translation done.]

*** NOTICES ***

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is a block block diagram for explaining one example of the fixed form document preparation equipment in this invention.

[Drawing 2] It is drawing for explaining an example of the fixed form document drawn up by the fixed form document preparation equipment in this example.

[Drawing 3] It is drawing showing an example of the master file of the document shown in drawing 2.

[Drawing 4] It is drawing for explaining that shared memory space works as a working memory of a user program and a document preparation program.

[Drawing 5] In a document preparation program, the Ruhr file for explaining how the permutation part of a fixed form document is replaced is shown.

[Drawing 6] It is the flow chart of the retrieval means in this example.

[Drawing 7] It is the flow chart which shows an example of the flow of processing through the data communication means between a document preparation program and a user program, and the detail of step 64 shown in drawing 6 is shown.

[Drawing 8] An example of the flow of the processing in a document preparation program is shown.

[Drawing 9] An example of the flow of the processing in a user program is shown.

[Description of Notations]

11 ... User program 14 ... Storing section

12 ... Data communication means 15 ... I/O section

13 ... Document preparation program

121 ... Shared memory space 141 ... Document data file

131 ... Ruhr processing section 142 ... Text file

132 ... Image data-conversion means 143 ... Master file

133 ... Sentence generation means 144 ... Ruhr file

134 ... Data permutation means 151 ... Document editorial department

135 ... Retrieval means 152 ... Document display

136 ... Data origination means 153 ... Document output section

[Translation done.]

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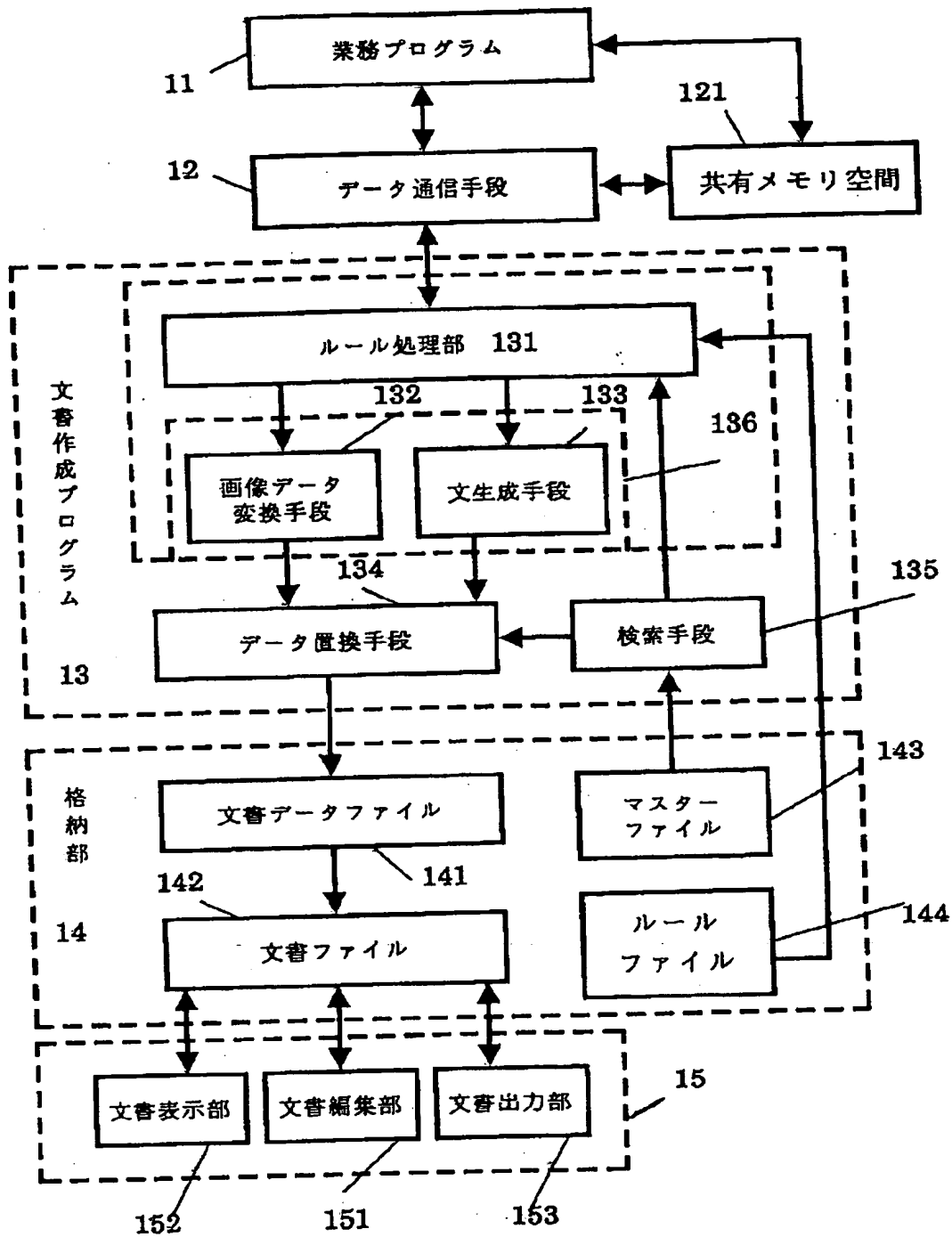
2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

DRAWINGS

[Drawing 1]

図1



{Drawing 2}

5. 個別ライフイベント資金配分についての基本的な考え方

5.1. 収入と支出

■支 出

富士太郎様のご希望の老後の生活費は、月額30万円です。この金額全てを賄うためには退職時点で7,109万円の資金が必要となります。

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富士太郎様の場合、第3章の確認項目に基づき、公的年金、企業年金、個人年金、受取保険金などの一時収入の合計が5,695万円(月額24.5万円)があると予測されます。

これらの、収入と支出をグラフにすると以下の通りです。

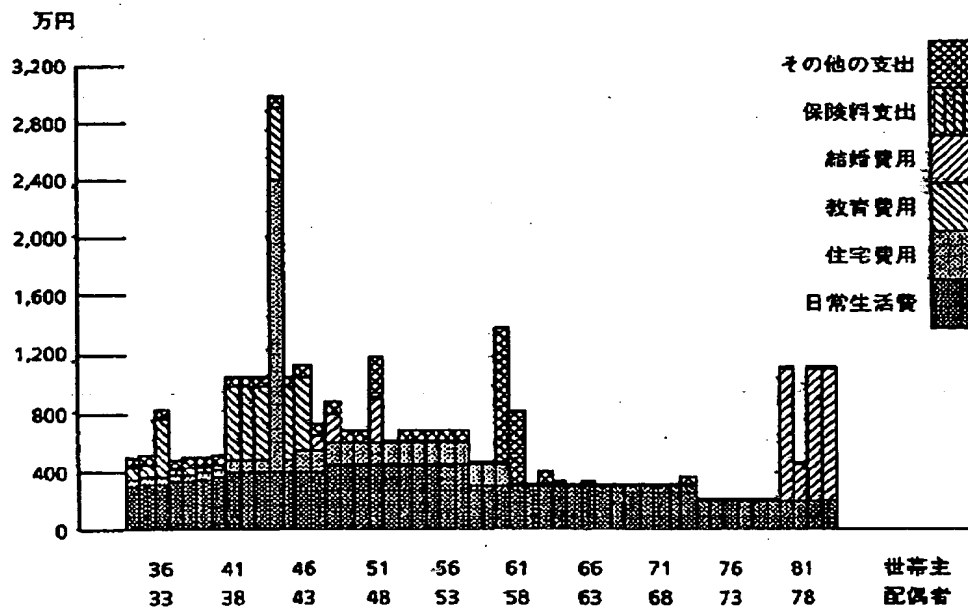


図3

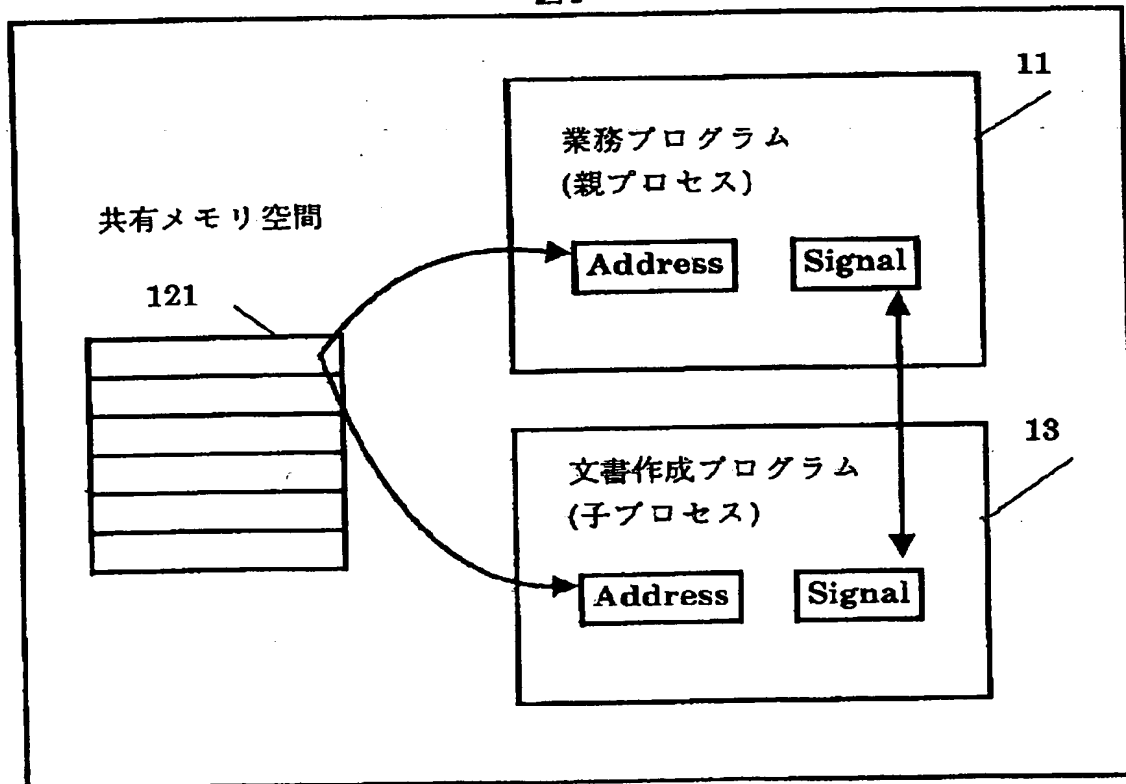
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てを賄うためには退職時点で$$NUM2万円の資金が必要となります。
しかし、$$STR1様の老後におきましては、$$STR2}}
Para{Para{0,1,0,0,0,12,18,0}, Tabs{003000c000f001380180}}
Text{Font{0,12,0,0,0,0,0}, String{~L収入 入}}
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Text{Font{0,12,0,0,0,0,0}, String{~L$STR1様の場合、第3章の確認項目に基づき、$$STR3などの一時収入の合計が}}
Text{Font{0,12,0,0,0,2,0}, String{$$NUM3}}
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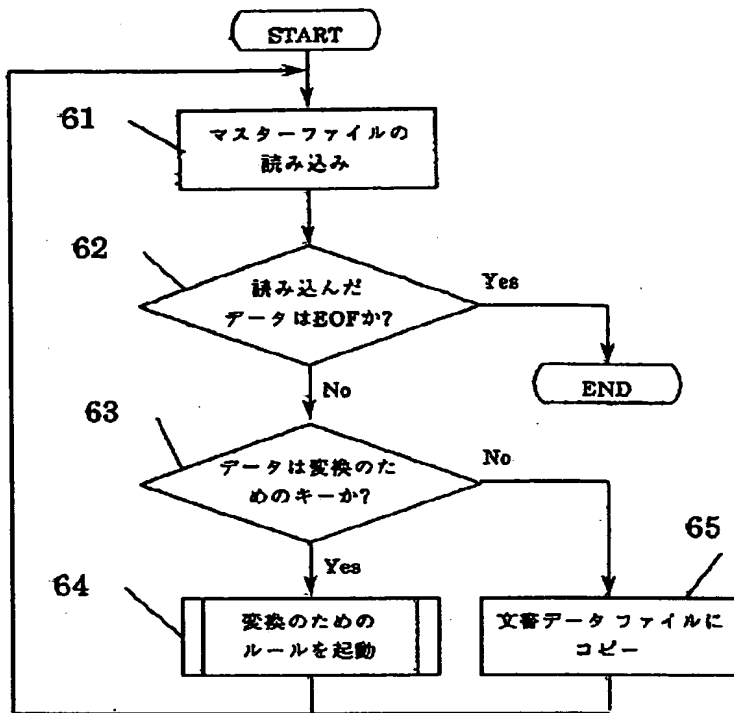
[Drawing 4]

図4



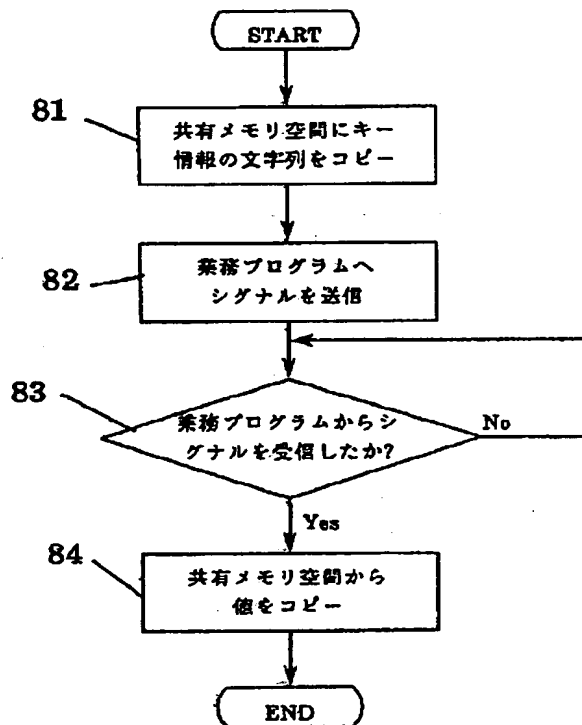
[Drawing 6]

図6



[Drawing 8]

図8



[Drawing 5]

```

STR1::
    GetMessage_Str(USER_NAME, sval);
    return(sval);

STR2::
    GetMessage_Num(SILVER_INCOME, nval);
    GetMessage_Str(SILVER_MAIN_INCOME, sval);
    if (nval == 1)
        return(MakeSentence(sval, "等の収入がありますので、老後の生活費用
の一部を補填することができます。"));
    else
        return(第3章の確認項目で収入のご記入がありませんでしたので、ないものと
して計算してあります。);

STR3::
    GetMessage_Str(SILVER_MAIN_INCOME, sval);
    GetMessage_List(SILVER_OTHER_INCOME, lval);
    if (lval == 0)
        return(sval);
    else
        return(MakeSentence(sval, lval));

NUM1::
    GetMessage_Num(SILVER_COST_M, nval);
    return(nval);

NUM2::
    GetMessage_Num(SILVER_FUND, nval);
    return(nval);

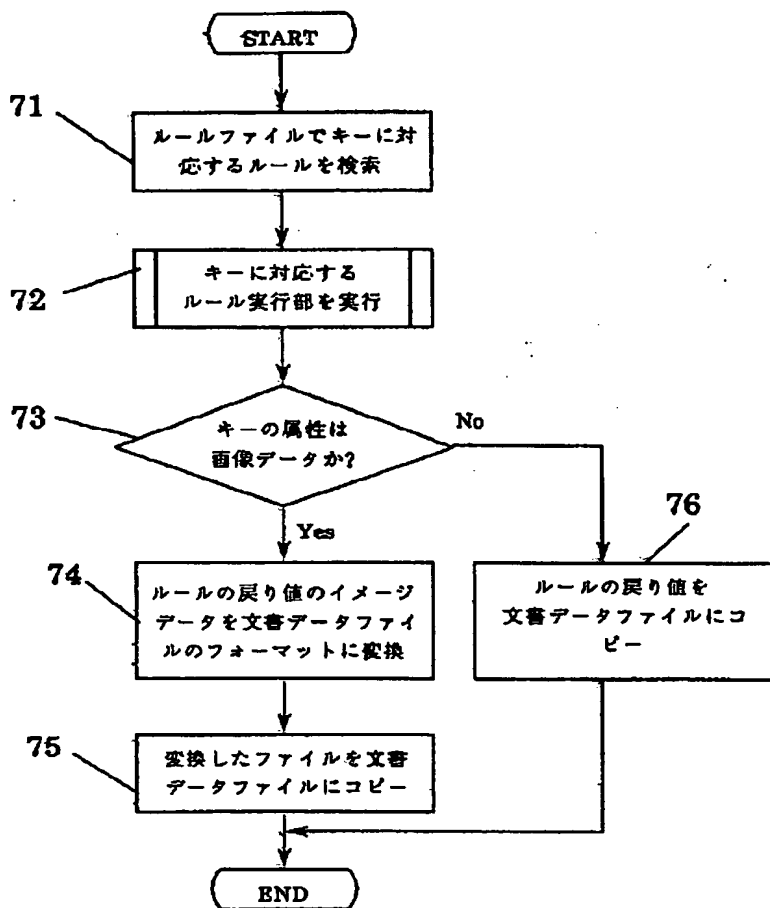
NUM3::
    GetMessage_Num(SILVER_ALL_INCOME, nval);
    return(nval);

NUM4::
    GetMessage_Num(SILVER_INCOME_M, nval);
    return(nval);

INCOME_GRAPH::
    Convert_bm(INCOME_BM, income_graph.idf);
    return("income_graph.idf");

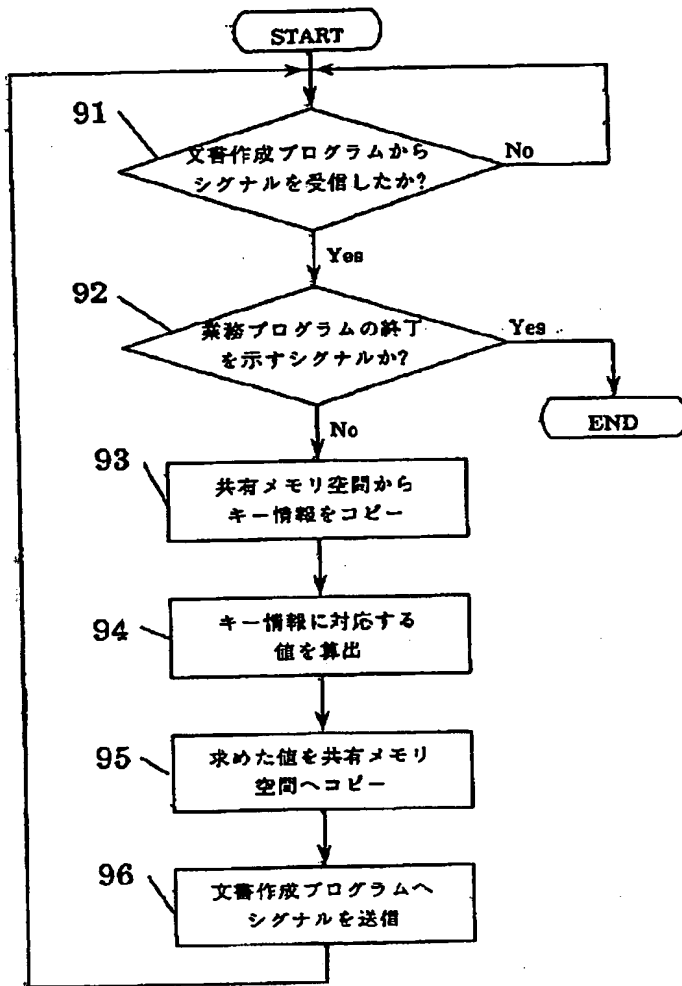
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図7



[Drawing 9]

図9



[Translation done.]

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